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A NEW RECORDING OF MAURITANIAN ROCK ART

by

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A Thesis submitted for the Degree of Doctor of Philosophy

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Abstract

Towards *"A New Recording of Mauritanian Rock Art"* is an attempt to utilise new methods and techniques for recording rock art in north-west Africa. This research aims to show the recorded work not as isolated figures but as groups of inter-related figures.

According to the published and unpublished inventories of the Mauritanian rock art sites, the two studied sites, which have only engravings, have not been recorded before. They are situated in the Adrar plateau in the north-central part of the Mauritanian Sahara.

In addition to the methods and techniques of recording rock art (*e.g.* tracing, rubbing and photography), the methodology used in this work includes a number of new aspects that seem to be ignored or omitted in most previous work on the subject. This new recording aims to provide new clues that enable the researcher to carry out two basic interpretative analyses and gain a better understanding of the recorded engravings as an example of the rock art of Mauritania.

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Preface

Mauritania has an enormous corpus of rock engravings, paintings and inscriptions which demonstrate the ancient inhabitants' artistic inclinations. Studying these artistic traditions can add to our understanding of the historical and prehistoric past of the country as well as of the broader Saharan zone. In other words, the rock art of Mauritania provides important evidence for a cultural landscape that was once highly populated and now is just an arid desert. This evidence could be taken as a tool that will enable us to evoke the minds of the forgotten peoples of this country and better understand what both environment and cultural associations were like during the past. The significance of these images lies in that they allow us to gain insight, for instance, into local Holocene fauna, human activities (hunting, and raising of livestock), war, and transport (chariots, harness strapped oxen, horses, and camels).

This study is based on an archaeological survey centred on a single season of fieldwork in a relatively unknown portion in the Adrar plateau in the north central part of Mauritania. One of the most important aims of the project is to carry out a research on the Mauritanian rock art which has received few studies compared with the rock art of other parts of the Sahara. Another aim is to systematically record new rock art sites in this unknown portion of the Mauritanian Adrar taking into account a number of elements that were formerly ignored or omitted by the scholars and researchers of this field.

The archaeological survey yielded two substantial engraved rock art sites never recorded before (see site inventories listed by Monod 1937, 1938; Mauny 1954; and inventory no. 1 that the *Institut Mauritanien de Recherché Scientifique* (*IMRS*) provided me with). The recorded data will be interpreted in this study by looking at the rock art from two different interpretative perspectives. The first perspective aims to interpret the archaeological data within the context of evidence of past environments and studies of palaeoecology carried out in the Mauritanian desert and elsewhere in the Sahara. The second approach is a culture-historical one, which aims

to deduce the cultural associations of the represented motifs and their putative links to ethnic/cultural groups that occupied the Sahara during the late Holocene.

Therefore, the main aim of this study is three-fold: to bring attention to the Mauritanian rock art which has received litte attention compared with the rock art of other parts of the Saharan zone; to make a new recording of this corpus with special emphasis on a number of elements that previous work either ignored or omitted; and to carry out two different interpretative analyses in order to gain a better understanding of the recorded corpus.

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Lastly but not least, I express my deep gratitude to my loyal wife for her patience during the long period of preparing this thesis. This work is dedicated to her and our two daughters Shorouk and Nada.

Chapter One

Critical Review of Previous Research

I. Introduction:

If we compare work on Mauritanian rock art with that of the other parts of the Saharan zone, we can conclude that very little research has been conducted in this western part of the Sahara. Despite this, a number of researchers have made important contributions to the study of the Mauritanian corpus.

II. Previous Work:

Monod (1937, 1938) studied the rock art of the country along with the engravings, paintings and inscriptions of the western Saharan region. Following a long inventory of the well-known rock art sites discovered by himself and others (101 sites, most of them are located in the Mauritanian Sahara), Monod attempted to establish an essentially chronological and culture-historical classification. In this classification he distinguished three main groups: the Ancient, the Middle and the Modern groups. In doing so, Monod depended upon the different patinas and the varieties of the represented motifs as basic criteria for rock art classification.

Similar to Monod, Mauny (1954) made a synthetic study of the rock engravings, paintings and inscriptions of West Africa, including Mauritania. He divided the rock art of this western region into five groups depending on the style and technique in addition to the represented themes and patination. Beside the proposed temporal and culture-historical classification, Mauny emphasised the importance of comparing the represented themes with the archaeological context of the rock art sites.

In addition to his synthetic study mentioned above, Mauny (1970a) described the rock paintings and inscriptions of Aguentour El Abiod in Rkiz massif (eastern Tagant,

Mauritania) in detail, trying to put them in chronological order. An important aspect of these paintings and inscriptions described by Mauny is the presence of so-called "chariots". As a consequence, he claimed that Rkiz was one of the stations that chariots traversed on a Trans-Saharan route during the first millennium BC!

Richir (1970) also studied a number of paintings in the rock shelters of Rkiz which do not appear to have been noted by Mauny. He briefly described the themes represented and their style. The most important point that Richir attempted to bring to our attention is problems in conservation: highlighting the deterioration of these paintings from one year to the next.

Lhote (1982) paid explicit attention to chariot representations discovered by Monod, Mourgues, Laffont, Couneille, Munson and Mauny. The importance of Lhote's study is to place the chariots of Mauritanian and western Saharan rock art in a chronological period (the *caballine*) which was characterised by an equestrian population which also practised cattle herding.

Holl (1986) discussed, with caution, the possibility of using the Mauritanian rock art as a tool of reconstruction of the past socio-economic aspects in the Neolithic Sahara. He gave an example from Dhar Tichitt where Vannier (1975), Beyries (1981), and Amblard (1981) analysed a number of rock art images in an attempt to identify the animals represented (mainly *Bos* species) and their sex (via udders) to show the importance of the given product (milk), and consequently of pastoralism. Holl criticised this notion. According to him using rock art images for this purpose (*i.e.* reconstruction of different aspects of past economic life) is problematic mainly because the chronological dating of such images is uncertain (Holl 1986: 144).

Finally, Vernet (1993) wrote a comprehensive synthesis of the Mauritanian rock art in his *"Préhistoire de la Mauritanie"* describing both the geographical and chronological distribution, and major themes. He devoted his efforts in this respect to show that it is possible to follow an economic and ecological evolution through the "Neolithic" art of the Mauritanian Sahara.

III. Critical review of previous research on Mauritanian rock art:

With regard to the above mentioned approaches, I present in this section a critical review of previous research on Mauritanian rock art. I divide my discussion on the subject into the following themes:

- The spatial distribution and the ecological setting of the Mauritanian rock art.
- The chronology of the rock art of Mauritania.
- The varieties of motifs present.
- Style and technique of the Mauritanian rock art.
- The problems raised by the rock art of Mauritania.

III.1 The spatial distribution and the ecological setting of the Mauritanian rock art:

The spatial distribution of the engraved and painted rocks of the country has been approximately established (Monod 1937, 1938; Mauny 1954; Vernet 1993). Geographically, there are three main regional corpora of Mauritanian rock art: the area of Bir Moghrein in the north; the Adrar in the north central part; the Tagant and Dhar Tichitt-Walata in the south. Another less well-defined regional corpus is that found around the Hank in the far north east (Maps 3-7).

From this geographical distribution of rock art in the country, it is worth noting that rock engravings and paintings seem to be completely absent along the southwest coast (Map 3). This phenomenon has been explained in two ways: the absence of suitable rock surfaces and the lack of rock art tradition in the cultural area (Vernet 1993: 122). In addition to what has been already mentioned above, I argue more exploration in suitable areas may lead to new discoveries of rock paintings and engravings. Indeed, the geological structure of an area plays an important role in this respect (see Richir 1970: 86), but it should not be taken as the only reason for the presence or absence of rock art:

> Innumerable different factors may have influenced the placing of rock art. Some are physical: the choice of rocks (smooth surfaces, hardness, shape), the inclination and orientation of rock faces, the accessibility of the site, and links with trails or water. Others are phenomenal-attributes which stimulate visual responses such as prominent locations, auditory responses such as sound effects, aesthetic responses, and spiritual responses (good or bad places and places associated with creation stories or vision quests).
>
> (Bahn 1998: 99)

Therefore, if we only considered the geological structure of rock surface and nothing else we would have absurd results on the ecological setting of the Mauritanian rock art. However, the geographical distribution, mentioned above, shows that most rock art sites in Mauritania are located in isolated places in the present Sahara. But this does not necessarily mean that the ecological setting of such sites, as Anati (1994b: 28) claims, "seems to fit the revelation pattern". We cannot adopt in this respect the biblical concept that "the prophet comes from the desert" as Anati did in his discussion on the ecological setting of rock art simply because it is not reliable to explain this phenomenon in the light of our own/recent concepts. Moreover, there are a number of rock art discoveries that withstand such explanations. The paintings and inscriptions discovered in the isolated cave of Tarf-ech-Cherif in Rkiz massif, for example, belong to Berber horsemen who used to cross the area during the end of the first millennium BC and thereafter. This site was found in a place where water was abundant (Mauny 1970a: 75-6). Consequently, I suggest that the cave was a resting-place for horsemen and other groups. It is also possible to consider the paintings and inscriptions of this cave as memorial art. A narrative scene of the group of six persons from the Horse Period, the fight of the horseman with a "Libyco-Berber" camel rider, and proper names and signatures from the Arabo-Berber period - all these elements may confirm my hypothesis. However, the given example shows that the ecological setting and the geographical distribution of the Mauritanian rock art are affected by different factors. These factors could be physical, phenomenological or both, and researchers have to deduce the evidence that enable them to define the involved factor(s).

III.2 The chronology of the rock art of Mauritania:

In 1938, Monod divided the Mauritanian and western Saharan rock art corpus into three groups: Ancient group (archaic), non-literate; Middle group, literate (ancient Tifinagh); and Modern group (recent), literate (modern Tifinagh, Arabic).

The subjects of the Ancient group, according to Monod, are "Neolithic" on the basis of two reasons. First, there are engravings of the ancient type on steles associated with Neolithic burials found in Lemaqader in Chinguetti and Ouadan (in north central Mauritania). Second, there is an extraordinary abundance of images of domesticated cattle identical to those of other areas in the Sahara: the design, the figures, the horns, the chin-strapped pendants are all essentially the same (Monod 1938: 93- 94). The following table summarises the chronology of western Saharan rock art proposed by Monod:

Group	Period	Represented Themes	Patination
Ancient (archaic, precameline)	Prehistoric (Neolithic)	Ethiopian Fauna: elephants, giraffes *etc.*, domesticated cattle.	dark
Middle (cameline, pre-Islamic)	Libyco-Berber	horses, camels, horse and camel riders, round shields, javelins, hunting scenes: ostriches, oryx, carnivores; ancient Tifinagh.	medium with some exceptions
Modern (recent, Islamic)	Arabo-Berber	modern Tifinagh, Arabic inscriptions, cryptographs: *ibraniyya*, *saryaniyya*	light

(Table 1)

Chronology of western Saharan rock art proposed by Monod

From the above table, I can infer a number of very interesting points. First and most important is that Monod, in fact, proposed his classification based upon represented themes and their patination rather than the other important criteria that he mentioned: the technique, the style, and the content of the rock engravings remain the most important criteria for the purpose of rock art classification (*ibid.* 128). Indeed, depending on the represented motifs and the patination as criteria for a chronological classification is not without risk. Specific motifs could be used and repeated through different periods, on the one hand, and the patination, as Monod himself states, is a result of strictly local conditions (*ibid.* 127), on the other hand.

Second, when Monod represented the results of his study he completely ignored the third group (*i.e.*, Modern or recent or Arabo-Berber group). Up to this point, he states "The chronology of the western Saharan rock art can be simplified as follows: a Neolithic group [and] ... a Libyco-Berber group". He adds, "... a bovidian period is succeeded by an equine-cameline period" (Monod 1938: 127- 8) (Translated from French). Furthermore, in his previous study he mentions the Modern group as follows: "The Arabic inscriptions usually have little historical importance" (Monod 1937: 160) (Translated from French). In this regard, I do not agree with Monod simply because the study of these inscriptions, which consist of transcriptions of religious texts, proper names, sayings or proverbs, may provide us with useful information about the evolution of religious beliefs in this region and other cultural and social customs of this period which is still continued in this part of the Sahara.

Third, although Monod has suggested that "the chronology of Saharan rock art should be determined by evolution of the fauna represented in the pictures" (Alimen 1957: 361), he classifies both wild "Ethiopian" fauna and domesticated animals (cattle) in a single group (the Ancient group). Monod goes further when he concluded that the Neolithic group (the Ancient) is "Homogenous and should not be divided" (Monod 1938: 127) (Translated from French). In my opinion, this group could easily be divided into two (or more) groupings in order to accommodate the distinctive ecological and economic changes in the Mauritanian Sahara during early prehistory. Similarly, the Middle group that Monod attributed to "an equine-cameline period" (*ibid.* 128) could be classified into two. Lhote (1982) explains the situation as follows:

> While Monod was conducting his research, the importance of the horse was ignored in the chronologies of Saharan rock art. For this reason it was considered reasonable to evoke the terminal precameline phase, as a second stage of the bovidian period.
>
> (Lhote 1982: 208)
>
> (Translated from French)

Finally, Monod's classification views the art as "documentary" (Davis 1990: 273). To establish a chronological and culture-historical classification, as Monod attempted, it is important to get precise dates for both the rock art subjects and the human or cultural groups involved. For such reasons Monod, himself, claims:

> It is impossible to give a precise chronology, not even a rough one. So far no point of reference can delimit a fixed end of the Neolithic period and arrival of the proto-Berber riders. The Libyco-Berber period has no *terminus ad quem* apart from the introduction of the Islamic elements to the region accompanied by the Arabic language.
>
> (Monod 1938: 128)
>
> (Translated from French)

Despite all of this, Monod's classification remains as the corner-stone of the chronology of Mauritanian and western Saharan rock art. It was unreasonable in his time, or even today, to rely on the chronological classifications of the other parts of the Sahara.

In 1954, R. Mauny established another classification for the rock art of West Africa, including Mauritania. In his classification, there are the following groups:

Group	Duration	Represented themes	Style	Patination
Naturalistic with Large Ethiopian Fauna	5000-2000 BC.	Large Ethiopian Fauna: hippopotamus, rhinoceros, elephants, crocodiles, giraffes, *etc.*; hunters with throwing weapons and arrows	naturalistic	dark
Cattle Herders	2500-1000 BC	cattle herders (naked and equipped with bow)	semi-naturalistic	lighter: medium
Equine	1200 BC	horses, chariots, javelins, round or rectangular shields, Libyc inscriptions.	schematic	light
Libyco-Berber	200 BC-700 AD	chariots, horses, javelins, round or rectangular shields, knifes hanging on the arms, camels, ancient Tifinagh derived from Libyc.	more schematic	light
Arabo-Berber and Modern	700 AD-our era	hunting oryx, ostriches *etc.*; javelins, cross-swords; modern Tifinagh, Arabic inscriptions, camel riders.	highly schematic	light

(Table 2)

Chronology of western Saharan rock art proposed by Mauny

From the above table, it is clear that Mauny classifies both wild and domesticated animals (cattle) in two different groups: the Naturalistic Group with Large Fauna, and the Group of Cattle Herders. He also classifies horses and camels in two distinct groups: Equine Group and Libyco-Berber, and gives approximate dates for each group.

Mauny followed the traditional theory of the 1930s which maintains that the earliest Saharan rock art, namely the engravings of "*Bubaline*" school, represents only wild animals (Muzzolini 2000: 89). It seems that Mauny's classification was an attempt to show the ecological and economic changes that occurred in the Neolithic Sahara.

Although archaeology may demonstrate that such changes did occur, it should be stressed that more than one economic adaptation can be functioning in a region at any given time. The following examples show how difficult it is to completely rely upon Mauny's classification: the representations of humped cattle in the Air -which are attributed to the recent phase of the "Libyan Warrior" school (*ca.* 1000 B.C.)- belong to a later period; the images of humped cattle in the Ennedi are placed in the Camel Period; cattle representations of Oued Djerat in Tassili go back to the Final Bovidian and the Horse Period (*ibid.* 94); long-tailed sheep and goats (relatively late arrivals in North Africa) are depicted within the engravings of the supposedly early Saharan corpus: the *Bubaline* (*ibid.* 96); donkey images are represented within the engravings of the *Bubaline* School in the Saharan Atlas (*ibid.* 103). This means that "All schools of Saharan rock art, including the earliest, show images of domestic [animals]" (*ibid.* 90) and, therefore, there is no definite evidence of the sequence proposed by Mauny. It is now becoming apparent that some domestic taxa (especially cattle) appeared earlier in the Sahara than previously expected (MacDonald 2000: 9). In this regard, recent research has yielded earlier dates for domesticated cattle in West Africa than that first proposed by Mauny. According to this research, domestic cattle in the region may date from at least 6300 bp and possibly earlier (MacDonald & MacDonald 2000: 144). In addition, cattle herders and other successive groups practised seasonal hunting of wild animals. Thus, we have to emphasise again the fact that more than one economic adaptation can be functioning in a region at a given time. For such reasons Mauny, himself, admits:

> The date of disappearance of a certain animal, the Ethiopian fauna for instance, is not the same in Mauritania as it is in South of Oran or Tibesti. This also applies to the presence or absence of Tifinagh or the Islamic issues [Arabic writing].
>
> (Mauny 1954: 17)
>
> (Translated from French)

Finally, one can conclude that Mauny followed Monod in establishing a chronological and culture-historical classification, but in doing so, he gave new dimension(s) to the name of each group by introducing the faunal element, style, or cultural group (see Table 3).

Group's name	Style	Fauna	Cultural Group
Naturalistic Group with with Large "Ethiopian" Fauna.	naturalistic	wild "Ethiopian"	hunters
Group of Cattle Herders	naturalistic/ semi-naturalistic	cattle	herders
Equine	schematic	equine	Proto-Berber
Libyco-Berber	more schematic	cameline	Libyco-Berber
Arabo-Berber and Modern	highly schematic (simplified)	camel, oryx, ostrich, *etc.*	Arabo-Berber

(Table 3)

Chronological and culture-historical classification of western Saharan rock art proposed by Mauny

Sixteen years after establishing his classification, Mauny (1970a: 75- 6) applied the same chronological order to the paintings and inscriptions that he discovered and recorded inside the cave of Tarf ech-Cherif, Aguentour El Abiod in the Rkiz massif. He divided the discovered corpus into three groups:

a) Horse Group (the transition from the Neolithic to Iron Age, first millennium BC and thereafter).
b) Libyco-Berber Group (? 200 to 700 AD).
c) Arabo-Berber and Modern Group (700 AD to our era).

Again, he depended upon the represented themes, motifs, and style in order to put these paintings and inscriptions into a chronological and culture-historical order.

Based upon the represented motifs only, Vernet (1993: 126) classified the Mauritanian rock art in three successive groups trying to deduce the economic and the ecological evolution of the Neolithic Sahara. According to Vernet's view this evolution may be represented as follows:

a) Representations of the Large Wild Fauna and the game of hunters at the beginning of the Neolithic era

b) Representations of domestic fauna, mainly cattle, from the third millennium BC onward

c) Representations of the first millennium BC which poorly present bovines, chariots, horses, camels, hunting scenes (antelopes, gazelles, ostriches), in addition to donkeys, sheep, dogs, and warthogs (very rare)

Yet, Vernet did not bring to light new elements in his classification. He tried to follow Monod's and Mauny's classifications. In other words, he attempted to confirm the idea that Mauritanian and western Saharan rock art should be divided according to the represented fauna. Hence, he divided the Mauritanian corpus, like Monod, into three groups, but followed Mauny's view when he temporally distinguished the representations of mega and wild fauna from the domesticated one. He classified these representations in two evolutionary groups using almost the same expressions that Mauny chose for his classification (*i.e.*, Large Wild Fauna, and domestic fauna). Since his classification is based upon the animal representations only, Vernet combined Monod's Middle and Modern groups, and Mauny's last three groups into only one group (*i.e.* his last group mentioned above).

III.3 The varieties of motifs present:

The variety and variability of the represented motifs of Mauritanian and western Saharan rock art is high. According to Mauny (1954: 22), the represented motifs include the following:

a) Humans: hunters (hunting of elephants, ostriches, oryx, etc); cattle herders (looking after their flocks); warriors with their equipment (bow, javelin, shield); dancers with or without a mask; scenes of coitus; battles and individual fighting; horsemen and camel riders; initiation scenes.

b) Animals: Large "Ethiopian" Fauna (rhinoceros, hippopotamus, hartebeests, elephants, giraffes, crocodiles, lions, panthers, and cheetahs); desert fauna (ostriches oryx, gazelles); domesticated animals (mainly cattle, horses, camels); and fish (very rare).

c) Vehicles: chariots and boats (very rare).

d) Trees (extremely rare).

e) Alphabetical signs: Tifinagh, Arabic inscriptions, and European inscriptions.

f) Schematic motifs: marks or signs of clans, game boards (on horizontal surfaces), and other geometric designs.

Vernet (1993: 130- 148) also classifies the represented motifs of rock art of Mauritania. In his classification we can find the following categories:

a) Representations of wild fauna: elephants, rhinoceros, giraffes, big cats: jackals, hyenas (very rare), warthogs, crocodiles, lizards (?), gazelles, antelopes, ostriches.

b) Representations of bovines: mainly cows.

c) Representations of sheep and goats.

d) Representation of horses with chariots.

e) Representations of humans.

f) Late or modern representations: horsemen, camel riders, hunting gazelles and ostriches.

Apart from the idea of typology and establishing a chronological sequence, there is no point in classifying Mauritanian rock art at this point into separate categories. In other words, dividing the represented themes into single motifs may be useful for the typological analysis and the comparison of specific motifs in particular area(s). But, if this is the only aim of a researcher, s/he will not be able to conclude any relations between the represented motifs. As we will see in Chapter 4, this thesis, one of the most important aims of my description of the recorded work is to go from isolated engravings to groups of engravings in order to study the possible relations which the artists might have intended to establish. Consequently, it will be possible, in my interpretation, to conceive something about the thematic unity that the represented elements may constitute.

Concerning what has been said above, I claim that Mauritanian rock art, since the first discoveries, has never been systematically recorded (beyond mere sketches or photographs). Consequently, we can understand now why some authors believe that the Mauritanian corpus does not bring new elements that add to our knowledge on this

corpus, on the one hand, and on that of the broad Saharan zone, on the other (see, for example, Vernet 1993: 121). Therefore, the systematic recording and studying of the relations in the rock art of Mauritania will enable us to discover the new elements that make new explanations possible.

III.4 Style and technique of Mauritanian rock art:

According to the previous research on the Mauritanian rock art, the technique of the represented figures is as follows:

1- The Large Wild Fauna (Ethiopian) is executed with deep, polished lines (Mauny 1954: 9).
2- In the group of cattle herders, the art of engraving is already on the decline: the beautiful engravings with deep lines became more and more rare (*ibid.* 9). The representations of domesticated cattle are executed with lines that are hardly ever deeply incised, while the engraved surfaces are hardly ever polished (Monod 1938: 94).
3- The engravings of the Libyco-Berber group became hastier (Mauny 1954: 14).
4- The engravings of Arabo-Berber and Modern group are also hasty. They are simplified to the extreme (*ibid.* 17).

In the light of the style used, representations of Mauritanian rock art may be classified into the following categories:

1- The engravings of Large Wild Fauna (Ethiopian) and some of domesticated animals (mainly cattle) are naturalistic where the artist is trying to depict the animals in the most accurate way (*ibid.* 9).
2- The paintings and engravings of the Horse period (mainly chariots) are very schematic (*ibid.* 22)
3- The engravings of Libyco-Berber group are more schematic than in other periods (*ibid.* 14).
4- The paintings and engravings of Arabo-Berber and Modern group are stylised (*ibid.* 14). There are also a great number of marks and signs which are abstracted (*ibid.* 22).

From the above we can follow two styles of the Mauritanian rock art: the naturalistic style and the schematic one. In this respect Mauny states:

> The first is an accurate reproduction of the subject, the real work of art mainly the Ancient group. But we have to note that some paintings and engravings of the second group (the cattle herders of the bovidian style) can be considered as naturalistic. The other style (the schematic) consists in the simplification of lines of the represented figures.
>
> (Mauny 1954: 17)
> (Translated from French)

Concerning the above statement, I do not agree with Mauny that the "naturalistic" style is necessarily an "accurate reproduction". Also, I cannot understand what constitutes "the real work of art". In this respect, I believe that no work of art is "naturalistic". The fact that Mauny, and others, ignored is that all artists may have tried to depict ... in different ways ... the animals as they appeared to them in nature.

Style is "the constant form- and sometimes the constant elements, qualities and expression- in art of an individual or group" (Shapiro in Brandl 1977: 222). It is "a mode of constructing and organising motifs" (Layton 1977: 34). Style, above all, is "a kind of artistic type ... a recurrent cluster or complex of interrelated traits ... [it] is not separated from meaning or content" (Munro in Brandle 1977: 222).

Naturalism, however, is "the characteristic which deals with the natural and which conforms to nature and is opposed to idealism and symbolism ... naturalistic representations are those showing movement and vitality. The animal representations which are called naturalistic are those where the stance of the animals is natural" (Lorblanchet 1977: 45). Schematisation, on the other hand, could be considered as "the conventional representations in which a few minimal traits only emphasises for the identification of a figure ... [It is] the progressive reduction of details of the representation, leading eventually to a minimal number of lines allowing at least an approximate identification" (Ripoll 1977: 418).

McCarthy defines style for the purposes of rock art studies. According to his definition, style is:

> The total design or pattern of a figure, whether it be in outline, linear, solid, or bear a line design. It is the final composition of the engraved, scratched, abraded, pecked or painted marks with which a figure is depicted that is, the manner in which the marks of the techniques are distributed in a figure".
>
> (McCarthy in Maynard 1977: 388)

From the above, wecan conclude that style is the visible manifestation of the traditional forms of culture within any given society. It reflects the positive manners and expressions, which derive from culture and personality. Accordingly, style acts as a system of communication within the groups or the members who are linked to it. This also means that style represents the physical appearance of the patterning behaviour of society and its culture. Second, it seems difficult to distinguish specific style for an engraving or painting since a great number of animal representations have some degree of both naturalism and schematisation at the same time. In other words, no engraving or painting is entirely realistic or naturalistic. Changes in style, however, are based on "improvement of skill" and "the different modes of seeing the world" (Gombrich 1960: 10) and "if styles are different it must be because intentions have changed" (*ibid.* 17). The realistic style or naturalistic style does not mean copying nature because "sense, knowledge, and inference, all of which come into play in perception" (*ibid.* 15). For such reasons, one may agree with Lorblanchet (1977: 49) when he spoke about *tendencies*: a tendency to realism or naturalism.

III.5 The problems raised by the rock art of Mauritania:

As mentioned in this chapter, Monod (1938) and Mauny (1954) used the patinas of the engraved rocks as a tool to establish the chronological sequence of the Mauritanian and western Saharan rock art. It is worth noting that this tendency has continued since they conducted their research. Lhote (1982), for example, used the same method in his study for the chariots of Mauritanian and western Saharan rock art paying little attention to the style used in executing these chariots and other motifs. The following quotation shows to what extent Lhote relied upon the patination in his comparative study of the Saharan chariots:

> Among 88 complete chariots, 47 have a dark patination and 41 have a light one. In the accompanying engravings 200 have a dark patination and 177 have a light one. ... The dark patinated group includes 75 bovines and one horse (?). As to the wild fauna it includes 2 elephants, 7 giraffes and 44 antelopes. As to the figures with a light patination there are 61 bovines and 4 horses while the wild fauna includes an elephant (?), 4 giraffes and 10 antelopes.
>
> (Lhote 1982: 206- 7)
>
> (Translated from French)

Depending upon the patination as a criterion for classifying the Mauritanian rock art in chronological order is problematic. According to the previous studies, the patination of the Ancient Group is dark, and that of the Middle Group is medium, while the patination of the Modern Group is light. But, the patination of the Middle Group has some exceptions.

> There are camels with dark patination, they are as dark as the pre-cameline engravings, but these do not belong to the Ancient group. It is unlikely that the camels with dark patination belong to the Ancient group because of this patination
>
> (Monod 1938: 95)
>
> (Translated from French)

Consequently, using additional criteria is vital to place the represented motifs in their chronological order. Beside the other criteria proposed by previous work (*i.e.*, style, technique, and content), I suggest in this regard the use of superimposition of the represented motifs.

Another problem raised by the Mauritanian corpus is the fact that most discovered rock art sites are not associated with other archaeological materials (*e.g.*, the faunal remains, the stone tools or other industries). Richir, for instance, brought this point to our attention when he studied the rock paintings of Rkiz. In this regard he wrote: "What is remarkable is that most of them [the paintings] are not close to sites with lithics" (Richir 1970: 86) (Translated from French). Thus, material remains play virtually no role in establishing a relative chronology of the Mauritanian rock art. Mauny explained the difficulties that researchers may face when using such material remains as a tool for classification of rock art:

> The lithics are a trustworthy point of reference if the majority of the typical sites of the region display the same kind of lithics. Of course, it goes without saying that many sites, and particularly caves and rock shelters protected from the wind, have been continually used as habitats through the periods. In addition, many lithics of previous periods could be re-used in a consequent period. Those two facts can easily misguide a specialist to date an engraving in a more recent period.
>
> (Mauny 1954: 25)
> (Translated from French)

Along with the two facts mentioned above, it is important to note that lithics and other associated material remains of previous periods could be eroded from earlier deposits. Consequently, depending on such remains could lead to misleading results on the proposed chronology of rock paintings and engravings.

Among the other problems that face the researchers of Mauritanian rock art is the identification of some represented motifs. One classic example of a misidentification of a rock art image is that of Aguentor El Abiod. While Mauny (1970a: 75) identifies the represented animals due to their association with chariots as horses, Lhote (1982) sees them as bovines. He suggests this identification in the light of the position of the yoke which is attached at the same place as the one of the other bovines discovered in Bled Initi in Dhar Tichitt by P. and C. Munson (*ibid.* 208- 9).

Finally, I have to mention the problem related to the state of research in the Mauritanian corpus itself. As I mentioned in the beginning of this chapter, very little research has been done in the Mauritanian Sahara. The climate is extremely hot and dry in most of Mauritania with few water sources (including wells). This may constitute one of the most important reasons why this part of the Sahara falls outside the interest or capabilities of most rock art researchers. According to Bahn (1989: 16), the climate is one of the most important factors that may affect the particular area that archaeologists choose to work. In addition, the costly international flights (£ 900+) may contribute to the trend of leaving this part of the Sahara virtually unexplored. Another reason for the lack of the research on Mauritanian rock art is that most researchers of Saharan rock art have the idea that the rock paintings and engravings of the western part of the Sahara, and particularly those of Mauritania, lack the "aesthetic excellence" of those, for instance, of Tassili-n-Ajjar, Hoggar (Algeria),

Fezzan, Acacus (Libya), or even the southern parts of Atlas mountains (Morocco). In this respect, Th. Monod writes: "In the western Sahara, there is nothing comparable to the prodigious ancient representations of South of Oran, Ajjar or Fezzan; the western area is poor both in quality and quantity" (Monod 1938: 127) (Translated from French). Likewise, Vernet (1993: 148) states that rock art in western Sahara never reached the aesthetic standards and emotive qualities of paintings and engravings of the Central Sahara. He goes further when he concludes that "it [the Mauritanian corpus] hardly brings new elements to the study of Saharan rock art" (*ibid.* 121).

However, I believe that we need to reconsider Mauritanian rock art. Regardless of its aesthetic standards, it remains one the most significant available tools for reconstruction of a part of life during the historic and prehistoric past of the country. To this end, Willcox (1984: 7) states "The study of [rock] art reveals aspects of man's nature not deducible from his material culture".

Chapter Two

Mauritanian rock Art: Why, Where, and How

I. Introduction:

This chapter is divided into three sections: Why I have chosen Mauritanian rock art for my research: Where in the Mauritanian Sahara I decided to seek new rock art sites; and How I have made new recordings of Mauritanian rock art.

II. Why Mauritanian Rock Art?

I have chosen Mauritanian rock art as the core 'case study' of my research for a number of reasons. First and foremost, Mauritania, like other Francophone African countries, has long maintained a close academic alliance with their erstwhile coloniser. As a result, rational research priorities, and access to limited funding has long been influenced by French scholars. Given the aesthetic and quantitative importance of rock art corpora in other ex-French possessions like Algeria, Moroco, Mali, Niger, Chad *etc.*, Mauritania's more 'meagre' rock art heritage was neglected by the limited group of French rock art scholars. Moreover, other foreign researchers and local scholars have been kept out by this French blockade. Thus, Mauritania is interesting as a relatively untouched terrain for rock art research. Consequently, I argue that the neglect of the Mauritanian corpus could be attributed, amongst other things, to policies implemented during the colonial period. As De Barros (1990: 155) states: "Until the 1960s, the history of archaeology in francophone West Africa was primarily the work of the French". Of course, West Africa during the colonial period was divided into two: Anglophone West Africa (the modern countries of Gambia, Ghana, Liberia, Nigeria and Sierra Leone), and Francophone West Africa (Senegal, Mali, Mauritania, Burkina Faso (formerly Upper Volta), Guinea, Cote d'Ivore, Niger, and Togo). The *Institut Fondamental de l'Afrique Noire* (*IFAN*) in Dakar founded under Théodore Monod in 1939 "reflected the French colonial policy of centralisation

and assimilation of its African territories within a single political ... identity" (*ibid.*). The same can be said for the Anglophone West African Archaeology. In this regard, we find the following:

> Britain administered its colonies as distinct and separate entities. This provided little incentive or opportunity for compiling comparative scientific information. Archaeologists worked largely in isolation and in ignorance of each other's research.
>
> (Kense 1990: 135)

Colonial archaeologists were few in number and tended to concentrate on 'plumb' regions, causing most Francophone rock art researchers to concentrate their efforts on Algeria. Hence, these regionalist and colonialist factors could be taken as one of the most important reasons for the lack of work on the Mauritanian corpus. In the *Encyclopedia of Precolonial Africa*, for instance, there is no reference to the Mauritanian corpus itself even though there are two sections dealing with "Saharan rock art" (Muzzolini 1997: 347- 352) and "Western African rock art" (Husecom & Marchi 1997: 352- 357). All Husecom and Marchi wrote was just a few words: "[...] this style [the geometric] ... has been used ... not only in the Adrar des Iforas north of Mali [...] but also in the Tagant in the south of Mauritania" (*ibid.* 354), "In Tondia, Mali, two engravings of carts can be compared to those discovered in the Mauritanian Adrar" (*ibid.* 355). This example shows that there is a deep ignorance of the Mauritanian rock art not only amongst generalists but also amongst specialists of rock art in the Sahara, including the western part.

The second reason for choosing the Mauritanian corpus as the main subject of my study is derived from the argument at the end of the first chapter (*i.e.* the supposedly relatively poor quality of the Mauritanian rock art). In this respect, I argue that we need to reconsider the Mauritanian rock art since the Saharan zone, which includes Mauritania, has an enormous corpus of paintings and engravings, and our knowledge of the rock art of this wide zone will remain defective if we ignore for one reason or another the importance of the Mauritanian corpus. Consequently, rock art researchers need to abandon this superficial judgement about the "beauty" of Mauritanian paintings and engravings in order to fill the large gap in our understanding of the Mauritanian rock art in particular and Saharan rock art in general.

Third, the rock art of Mauritania may contribute in discussing and understanding a number of different archaeological issues that are difficult to interpret in the light of other past remains such as Saharan palaeoenvironment and cultural historical associations.

Finally, the Mauritanian rock art is worth recording due to its ongoing deterioration as a result of both natural and human factors. Therefore, emphasis should at least be put on the recording process, if not on preservation, since up to now there is no specific strategy to protect this kind of cultural heritage in this part of the Sahara.

Given the recent expansion of tourism in the last few years, on the one hand, and my fieldwork on the Mauritanian Adrar, on the other hand, hopefully the deep ignorance of this artistic corpus will gradually diminish.

III. New Rock Art Sites: Where?

In the one-month fieldwork, in collaboration with the *Institut Mauritanien de Recherché Scientifique* (*IMRS*) in Nouakchott, it was planned to survey a relatively unknown portion of the Mauritanian Adrar in the north central part of the country. Indeed, I chose the Adrar plateau for two main reasons. First, the majority of Mauritanian rock art is concentrated in this area. Second, the Adrar plateau includes a variety of sites with engravings previously dated on stylistic grounds to different periods. But, my initial intention or priority was given to discovering new rock art site(s) instead of re-recording the well-known ones.

Since a great number of rock art sites in this region has been studied (particularly in El Beyyed, El Rhallaouya, and Oum Arouba), I decided to conduct the survey in another portion of the Adrar plateau. I chose this region based on previous information on the sites that have been already recorded and published by Monod and Mauny, and on the unpublished list of known rock art sites in the Mauritanian and Western Sahara that the *IMRS* provided me with during my visit to Nouakchott (see Inventory 1).

I carried out my survey in the north of Atar which is located 450 kilometres to the north-east of the capital Nouakchott (a minimum eight hours drive north of Nouakchott) (see Maps 1.a and 2). It is worth noting that I did not follow most researchers who are, according to the "bureaucratisation of archaeology", forced to "limit their investigations to [...] studies situated close to the capital" (Gado in de Barros 1990: 171).

The base of my survey was Azougi which is located about 15 kilometres to the north-west of Atar beyond the E-n-Tarazzi passage in the Tayaret wadi (see Maps 9-12). The survey yielded two major new rock art sites: Foum Chor and Ahel-Ebdemmed (see Chapter 4 for detailed description).

IV. New Recording Techniques: How? (Research Methodology):

Mauritanian rock art has never really been systematically recorded (beyond mere sketches or photographs). This is simply because the archaeology of francophone West Africa, particularly during the colonial period, was conducted by non-specialists (*i.e.* colonial administrators, military officers, soldiers, civil servants, explorers, merchants and technical personnel especially geologists). In this regard De Barros (1990: 158) says, "Most excavations [and rock art discoveries] were private ventures done during officials' spare time". For this reason, we cannot entirely rely upon the work of these un-trained individuals.

Indeed, most of the early discoveries, reports, and written articles and studies on the Mauritanian rock art, ignored a number of elements, which need to be recorded. The published data on the Mauritanian corpus does not include any details regarding the relation of images to natural rock features (see for example: Monod 1937, 1938; Mauny 1954, 1970a: 72, 75; Richir 1970: 87, 88, 90; Lhote 1982: 205, 207; Holl 1986:145, 146, 150: Vernet 1993: 132-137, 142, 145-148; Vernet 1996: 112- 115, 117-124, 128, 130-131, 133). In addition, a great number of the attached figures in these published works do not show the position of the images in relation to one another (see, for instance, Monod 1937, 1938, Vernet 1996: 112-115, 117, 119, 121 and 131). In many cases, the 'traced' or drawn figures seem to be divided into isolated single images, but is this really the case? Furthermore, most of these works do not

include any photographs making clear the position of the engraved or painted surface (see: Holl 1986: 141-151, Vernet 1993: 123-149). Omitting or ignoring such elements may affect the ultimate explanation of art. Up to this point, Singer and Meighan (1990) write:

> Many of these [rock art] sites, even the best-known, have never been scientifically recorded so they are essentially 'undiscovered'. Scientific discovery belongs to the person who makes the scientific record. Dozens of new rock art discoveries are made every year because interested people choose to document them rather than give the location a passing glance and go on their way. A careful investigator will often find undiscovered elements and relationships at the sites which have already been recorded and published.
>
> (Sanger & Meighan 1990:16)

We can find the same circumstances not only among the researchers who deal with African rock art but also among the researchers who are concerned with rock art elsewhere. At Tanum, Sweden (once part of Norway), for example, rock art researchers until the end of eighties used to isolate the represented motifs of the rock engravings. Milstreu and Prohl (1996) explain the reasons for this as follows:

> The research [at Tanums Hallristningsmuseum Underslos] consisted of thematic documentation of different types of figures, for instance female-figures, types of boats, and of carvings with datable objects. It might be types of weapons, and types of ploughs *etc.* The method was suitable to give a survey of the frequency of the figures from which a meaning might be concluded. Furthermore, it might be used to form the basis of dating, because many datable objects as axes, lures, and ploughs are depicted so precisely that they may be compared with finds of antiquities from that period.
>
> (Milstreu & Prohl 1996: 7)

It is difficult to gain a better understanding of rock art without carrying out fieldwork. It is also difficult to conduct such fieldwork without prior training on the subject. In effect, I faced the crucial problem that N. David expressed. He noted that "some African archaeologists educated abroad have not been given the kind of supervision and guidance needed to ensure their proper training" (David in De Barros 1990: 171). The most important step was receiving the proper training which would enable me to carry out my field research on the rock art of the Mauritanian Sahara. As a matter of fact, I experienced the same conditions that Soustelle mentions: "An African student

may receive excellent classroom teaching but struggle to find adequate field [...] training" (*ibid.*).

Regardless of this struggle, I attended two field-training courses in Paspardo and Capo di Ponte (Valcamonica, Italy) to prepare myself for the fieldwork I would encounter in the Mauritanian Sahara. During this field-training I gained valuable experience in the different techniques and research methodology used in recording petroglyphs. I undertook courses that included the following activities: excavation (uncovering, cleaning, and inspection), frottage, tracing, photography and rendition. From this training, I was able to determine not only how to record, but also why and what to record.

IV.1 Why and What to record:

The methodology employed in my research aims to provide new clues which would enable me to carry out the required analysis and gain a better understanding of the recorded images. Hence, in my recording of the engravings of northern Atar (as an example of Mauritnian rock art of Mauritania), I took into account the following aspects: the position of the engravings relative to each other, the position of the engraved surface itself, the shape of the rock face, and cracks and other natural features in the engraved surface. But, why I did choose these aspects for recording?

IV.1.1 The position of the engravings relative to each other:

As Anati (1977: 59) emphasises, the "whole composition of figures or scenes should be traced together on the same [plastic] sheet [...] rather than dividing them up". Recording the position of engravings relative to each other provides the required data for the study of "the associative process" or "the dialectic of association" (Anati, 1994b: 49), and identifies "interspecific relations" (Ucko, 1992: 154) between individual figures. Placing the engravings together, as they are, prevents us from distorting the thematic unity intended by the artists. Therefore, this type of recording aims to "piece together clues of how the artist[s] think about what [they] intended to represent" (Fossati *et al.* 1990:12).

IV.1.2 The position of the engraved surface itself:

Recording the position of the engraved surface (*i.e.* vertical or horizontal) constitutes another important feature at this stage of rock art research. The advantage of recording this feature is connected with chronological concerns. Indeed, "there is a huge difference in weathering from vertical and horizontal surface. It is sufficient to compare petroglyphs of the same age executed in these different positions" (Arcà and Fossati 1996b). An example of the significance of such recording is that of Arcà and Fossati:

> [Recording] the very fine linear scratches engraved in the last glaciation [in Valcamonica] can date glacier retirement no later than 14.000- 12.000 BP. These lines lie on horizontal surfaces, exposed everyday to direct weathering. On the contrary, the Côa [valley] engravings lie on vertical surfaces, often half sheltered, not exposed to direct "beating" rain which we must recognise as the most important factor of erosion"
>
> (Arcà and Fossati, 1996a)

IV.1.3 The shape of the rock face:

The shape of the rock surface may affect the tracing process and, consequently, the explanation of rock art. This is what Clogg & Diaz-Andreu (1999) emphasised when they wrote: "In terms of the surface, despite it being roughly flat, the granulate structure of sandstone and its layered composition influence the reading of the image". Hence, recording the shape of the engraved rock is an integral part of gathering data in the field. Recording this feature may also offer a considerable contribution to the analysis of the attitudes and reactions of artists to their medium. To be more specific, the external form of the rock and its appearance may be responsible for choosing a specific type of rock for executing specific images. A framed rock, for instance, may attract the artist to create. Artists may adapt their work to the size of the surface; others may prefer making certain representations on a smooth surface. The shape of the rock itself, therefore, may attract specific types of artistic work. In "The National Park of Engraved Rocks of Naquane" at Capo di Ponte, for example, many rocks, such as the rocks no. 1, 35, 50, 57, have deep waves polished by the Wurm glacier. These large and heavily polished waves presented a medium for concentration of hundreds of engravings.

IV.1.4 Cracks and other natural features in the engraved surface:

Cracks and other natural features (holes, grooves, cavities, rock breaks, *etc.*) should all be traced. But why should one record such features? Sometimes, cracks and other natural features stimulate artistic creation. Accordingly, it is important to distinguish between anthropogenic marks and natural features, and know whether or not the artists used these natural features as a component of their artistic composition. In this case, it is useful to know the extent to which the artists used them to create their work. This distinction between natural features and man-made marks enables us to acquire accurate data for analysis and explanation:

> Only the detailed recording of all of the pecked marks and incisions executed by the artist permits the analytical study of rock art. By making a complete tracing the copier is able to define and document whether certain signs are natural or were made by the hand of man. He or she is able to distinguish with clarity the differences between one mark and another, and whether certain forms or cracks in the rock surface were left alone or exploited and completed by man [...] These tracings are essential for study: for analysing the technique, the styles, the periods, and for understanding the actions of the artist.
>
> (Anati 1994a: 13)

Recording cracks and other natural features has another advantage. It may provide ecological and chronological information about the site and the engravings. Moss, lichen and grass growing on engraved surfaces and inside the cracks could "arguably" offer information about their date (Fossati *et al.* 1990: 11). Cracks have a destructive nature and negative effects on the engraved surfaces since they ruin the engravings and deteriorate major parts of the engraved surface. Thus, recording cracks could also be useful for the purposes of organising rock art preservation.

Recording all these features may bring new elements to the study of Mauritanian rock art. Tracing and recording these features may also add details that previous works used to neglect. Therefore, viewing the engraved rocks in Mauritania in the light of these features may open new horizons of investigation and revise previous explanations.

IV.2 How to record:

The period of my fieldwork in the Adrar plateau in the north central part of the Mauritanian Sahara was spent undertaking survey and recording of new rock art sites.

IV.2.1 Survey:

Survey, as a research method, was made not only to locate new rock art sites in the chosen area but also to gather information regarding the physical landscape and the recent environment surrounding the engraved rocks. In other words, the aim of the survey was to identify new rock art sites and, subsequently, determine their size, morphology, local setting and structural features. This information, then, was utilised for the interpretation of the sites.

I surveyed the study area on foot when looking for new rock art sites. A Land Rover (4 x 4 hired with a driver from Nouakchott) was only used for approaching the nearest points and not for exploring the sites themselves.

Incidentally, it was not possible to get any prior information regarding the surveyed area for a number of reasons. First, the surveyed area has not been previously documented or well-explored by rock art researchers. Second, anyway it was hoped, as mentioned before, to carry on the research in a relatively unknown region in the Adrar plateau. Consequently, the only available published source of information was represented by a number of topographic and travel maps (see below). Third, even information held by the *IMRS* in Nouakchott did not mention the area where the sites were found. These difficulties bring to mind the importance of the specialised surveyors in locating rock art sites, especially those never recorded before.

Regarding the engraved rocks located in this survey, it was possible to view the first site (*i.e.* Foum Chor) while driving in the field motor vehicle (approximately two kilometres from Azougui to Foum Chor path). But, surveying the entire site itself was done on foot. On the contrary, approaching the second site (Ahel-Ebdemmed) required a foot survey of approximately ten to eleven kilometres (about three and half to four hours under harsh conditions).

In collaboration with a researcher from *IMRS*, accompanied by a driver, and local guides (see below), I concentrated on this relatively unknown portion of the Adrar plateau in an attempt to find new engraved surfaces.

I explored the entire area of the studied sites for two reasons: first, to familiarise myself with the rock art of each site and the nature of its surrounding area keeping in mind the relatively long period needed for recording; second and most importantly, to investigate and examine all the rock surfaces that lay within a one kilometre radius of each site. The definition of the site employed in my survey can be represented as follows:

> A rock art site is any place where there is rock art. Its boundaries are traced 500 meters [...] beyond the last decorated rock in every direction. Two clusters of depictions which are separated by a figureless distance of over 500 meters are considered two different sites.
>
> (Anati 1994b: 11)

Again, I did not plunge into the recording task after locating the engraved surfaces. Surveying the engraved rocks and the surrounded area of each site took a day per site. This period of time was sufficient to search for any items of local material remains. However, except for a very few broken quartzite cobbles found at Foum Chor, both sites under investigation had no cultural materials.

In addition to what has been said above, a rigorous measurement process had been carried out in order to give a precise account for the dimensions of the rock art sites in general and their engraved areas in particular. This stage of survey required great effort to take accurate measurements. In this regard, I used plastic tapes (2 x 50m) since they are the most commonly used in archaeological survey and are easier to use compared with the steel tapes which are not flexible enough. Beside the plastic tapes, I also used survey rods. The *IMRS* researcher and local guides (see below) played a supportive role which allowed me to achieve this task as precisely as possible.

IV.2.2 Cleaning:

Once the rock art sites were located, I marked off the surfaces that needed to be recorded. Indeed, the surfaces of both sites were not covered with sand or other accumulated debris. Therefore, there was no need for hard work involving excavation since the rock art to be recorded was clearly visible. The dry weather of the Saharan region, in general, does not allow moss, lichen or other vegetation to grow on the rock surface. What was needed in this case was only to brush the dust out of the engraved surfaces. Removing the dust was done with much care using a suitable brush made of nylon bristles.

IV.2.3 Mapping:

One of the first and most essential steps that followed finding the sites under investigation was recording their location on a map. In this regard, I used more than one method to locate the sites under research.

The first method was to record the locations on the topographic map that the *Ministère de l'Equipement: Service Cartographique* in Nouakchott provided. It was better to work with this detailed topographic map (in scale of 1: 200.000) which made it possible to record the location of both sites (see Map 12). On the other hand, I was not lucky to find "a bench mark or permanent surveyor's marker on or near [my] sites which makes it easy to give a precise location" (Sanger & Meighan 1990: 64). In the case of the Foum Chor site, it was not difficult to reach the site and, consequently, relatively easy to mention the most important features and the landmarks that could be useful to relocate it. On the contrary, accessing the second site (Ahel-Ebdemmed) was extremely difficult. There were not any obvious features that can serve as a guide to the Ahel-Ebdemmed site. It was useful, in this case, to use both road distances and compass directions to relocate the site. But, the help of the local guides, in this regard, is also of significant importance since they are the only people who are able to guide the researchers to such sites that lie in 'the middle of nowhere'. This was a major need especially in the case of the Ahel-Ebdemmed site which is very difficult to approach without the aid of the local guides who are not only familiar with the paths and directions of their own areas, but also specialised in this kind of 'business'.

The second method of recording the location of a site is by making a sketch or hand-drawn map (in the case of Foum Chor site). In this sketch I attempted to show the most important features or landmarks which include the main paths or trails; streams or dry creek beds; horizon, cliff face; and distinctive rock outcrops. In other words, the aim of such a sketch was to show the general appearance of the site area as seen on the ground. The location of a rock art site itself is marked by an arrow (see Fig. 2a).

Another method used in this research was to locate the sites within their landscape. I took good "long shot" photographs of the sites from considerable distances (for Foum Chor site see Figs. 1, 2, 3, 10, 12, 13, 17, 23, 24, 45, 46, and 47; and Figs. 80, 81, 82, 86, and 89 for Ahel-Ebdemmed site). Taking such long shot photographs of what the landscape looks like from some points where I can see each site can also be helpful in relocating the site and as aid in visually situating the site in its landscape.

Finally, Global Positioning Satellite (GPS) technology was also used to document the location of these sites. One of the advantages of using this method is that it allows a permanent and accurate location reference of the recorded sites. Another advantage is that the gained reading of the GPS (*i.e.* the longitude and latitude) enables us to plot the discovered sites on the topographical maps mentioned above.

IV.2.4 Naming the sites:

As mentioned before, the two sites under investigation were not previously known or recorded by anyone else. As a result, both of them have no name and no official site numbers. Under this circumstance, I had the right to name them. In doing so, I depended on local geographic designations since "they are not likely to change in the near future" (Sanger & Meighan 1990: 77). Invented names, based on motifs present or the whim of the discoverer, can eventually be misleading and serve no useful purpose. For these reasons, I named the recorded sites 'Foum Chor' and "Ahel-Ebdemmed" considering the prominent landmarks of the two geographical areas where they are located (for these geographical terms or designations see II.1 and II.2, Chapter 4, this thesis).

IV.2.5 Preliminary Recording (The site record form):

Recording information about the discovered sites was the next essential step of my fieldwork. A site record form is used for this purpose. The field notes on each site included: the location, site composition and geomorphology, site definition, general information concerning the engraved figures, definition of technique, environment, state of conservation, photographic documentation, site access, oral tradition regarding site, present use, local guides and informants.

IV.2.6 Photographing:

Photographing the sites was one of the primary tasks of my fieldwork. For some researchers, "photography can be the single best technique for recording rock art because it is done rapidly and provides an accurate record that is not dependent on how the individual eye sees images" (Sanger & Meighan 1990: 97). For others, "photographic recording must be a priority in rock art research [and] the photographic record could eventually become the only surviving evidence of rock art" (Wainwright 1990: 57). For me, this procedure was essential at each stage in the field. It included taking photographs throughout survey, uncovering, and inspection.

The shots taken during my fieldwork in the study area can be divided into four categories that show:

a) The location of each site in general: the overall site and setting (establishing shots or long shots) (For Foum Chor site see Figs. 1, 2, 3, 4, 5, 10, 11, 12, 13, 14, 17, 18, 23, 24, 25, 42, 45, 46, and 47; and Figs. 77, 78, 79, 80, 81, 82, 85, 86 and 89 for Ahel-Ebdemmed site).
b) The location of the engravings in the site (For Foum Chor site see Figs. 4, 5, 6, 7, 14, 19, 20, 23, 24, 26, 27, 29, 33, 46, 47, 48, 49, 54, and 55; and Figs. 90, 91, 92, 93, 94, 96, 99, 102 and 103 for Ahel-Ebdemmed site).
c) The position of the engravings in relation to one another (For the first site see Figs. 15, 21, 30, 33, 36, 37, 38, 39, 40, 41, 43, 44, 55, 56, 57, 58, 59, 66, 68, 69, 71, 72, 73 and 74; and Figs.98, 100, 101, 104, 105, 106, 107, 110, 111, 112, 114, 118, 120, and 121 for Ahel-Ebdemmed site).

d) The details of scenes and individual motifs (see Figs. 8, 9, 21, 30, 34, 3539, 40, 41, 44, 57, 60, 61, 62, 63, 64, 65, 67, 70, 75 and 76 for Foum Chor site; and Figs. 108, 109, 113, 115, 116, 117, 119, 122, 123, 124, 125 and 126 for Ahel-Ebdemmed site).

To give this task scientific value and objectivity, I paid much attention to taking the right perspective and using the necessary markers that are required in some cases (*i.e.* size scale). I also deliberately took these shots at different times of the day to have a better grasp of the engraved surfaces under different light conditions. I also paid much attention to taking these shots from different angles to ensure better results.

Photography is also used for the purpose of comparison. As expected, any tracing is filled with minor errors that can confuse interpretation for decades. Accordingly, comparing photographs and slides with rubbings and tracings (see below) offered me the opportunity to evaluate the consequence of the recording process as a whole. In this regard, I have mentioned that some of the pictures, in addition to a number of the slides, were useful in formulating the description presented in Chapter 4. This is simply because, in some cases, these taken shots show some significant details that do not clearly appear in the tracing. Again, checking such photographs and slides, and comparing them with what has been traced, offers a good opportunity to give precise description of the studied motifs and, consequently, to make new explanations possible.

In this task, I was careful to use more than one camera for two reasons. First and most importantly, I carried out my fieldwork in the heart of the Mauritanian Sahara and it is very difficult to get another camera if the case was damaged by the harsh conditions, or if the apparatus did not work for one reason or another. Indeed, it would have been difficult to find a good camera in any of the towns of Mauritania. Second, it was of vital importance to have more than one camera during the visual documentation of the rock art simply because I intended, for tactical and technical reasons, to take coloured photos, black and white photos, and slides of the same motifs from the same position at the same time (*i.e.* under the same light conditions from the same angle and the same distance). It was also very important to use the camera that I am familiar with. I used my own camera (Nikon: Zoom 120 ED AF). It is compact, light-weight construction with built-in 3.2X zoom lens from 38 to 120 mm focal length range and a

synchronized flash unit. In addition to the camera that I am familiar with, I used another two traditional (Pentax) cameras. However, whatever the camera used, it depends on the hands of the photographer (Sanger & Meighan 1990: 101).

Finally, I used both print (colour and black and white) films (negative films) and slide films (positive films). I believe it was better to depend on the colour films than the black and white ones to show the contrast of patina of the represented motifs in general, on the one hand, and distinguish the degree of patination of these engravings, on the other. Konica Centuria 200 (7 x 36), Fuji S-400 (1 x 36), ISO 200/24-Y (2 x 36), ISO 100/21 (2 x 36) were the colour negative films used in this task, and ISO 100/21 (2 X 24) for the black and white, while Jessop 100 (3 x 36) and Fuji (3 x 36) were used for the positive images. Accordingly, the total number of exposed films was 20 (12 colour films, 2 black and white, and 6 slide films). The total number of the (valid) shots taken for both sites and other related issues is 579 shots.

IV.2.7 Rubbing (Frottage):

Although it was difficult to see some details of the motifs on the engraved surfaces, I did not highlight or colour the rock engravings with any pigment. The reason is that applying any substance (*i.e.* temporary painting), no matter how impermanent, may cause damage to the engraved surface on the one hand, and affect the tracing process itself, on the other. Instead, I used the frottage or rubbing technique to make a negative copy of the engravings that are difficult to trace (*i.e.* those of the Western Face at Foum Chor site) (see Figs. 50 and 50a). I placed sheets of white paper (A2, 80 mg) over the engravings in four rows (two sheets for the first row and three sheets for each other rows). I was careful to place the sheets so that they fitted tightly to one another. Then, I rubbed the sheets with carbon paper rolled with a piece of soft cloth (towel). I started rubbing in the upper right corner of the engraved surface and completed the first row of rubbings vertically *et cetera.* As appears in Fig. 50, I did not remove any row of sheets from the rock until I finished the whole rubbing. I also took a number of photos of the rubbing "in order to avoid a distortion of perspective" (Milstreu & Prohl 1996: 25). In addition, I used a fixative to keep the rubbed sheets in a good condition. I gave each sheet its own designation (*i.e.* 1 to 11 on the back). The

rubbing technique was essential to examine some details of the engraved surface before and during the tracing process that occupied most of my fieldwork period.

IV.2.8 Tracing:

In view of the fact that "rubbings do not maintain precise spatial accuracy and are not, generally reproducible in tonal range or information revealed" (Wainwright 1990: 67), I used the tracing method to record the represented motifs of the sites under research. Tracing rock art is not only a difficult skill but also a crucial task that requires the learning of certain technical conventions, and more importantly it also requires much practice. For such reasons, it is not surprising that a well-trained rock art researcher is still learning regardless of the level he has reached. In this regard, I believe that no one can become a totally competent tracer. Even the most experienced tracer will observe some things incorrectly at the initial stage. In this regard, Milstreu and Prohl (1996: 11) state that "it is very difficult to reproduce a rock carving one hundred per cent correctly". One of the most important parts of the art of tracing, then, is learning how to look. Some may think that tracing engravings is slightly easier and quicker than tracing paintings. Indeed, tracing engravings requires the experience and the time that allow the researcher to reproduce every detail and, at the same time, keep the subjectivity to the minimum.

I started tracing only after an interval of time had passed after discovering the sites. My aim was to familiarise myself with this new area of research and style of rock art I was to work on. At this stage of recording, I depended on the direct tracing method to produce all the engravings one by one in addition to the cracks and other natural features that lay below the plastic field sheets.

This task was not simple but very complicated and it took longer than one might expect. A non-specialist might think that tracing the represented motifs would take only one day. In order to carry out this task at Foum Chor site (*i.e.* the tracing only) I spent eleven days. This period can be represented as follows:

12- 03- 2001: Tracing of the upper and lower right parts of the Western Face.

13- 03- 2001: Tracing the upper left part of the Western Face.

14- 03- 2001: Rubbing (the Western Face of the rock).

Tracing the Northern Face.

15- 03- 2001: Tracing the upper left part of the Western Face.

16- 03- 2001: Tracing the lower left part of the Western Face.

17- 03- 2001: Tracing the lower left part of the Western Face.

18- 03- 2001: Completing the tracing of the Western Face, checking for any corrections or minor details that need to be added.

Starting the tracing of the Eastern Face (the Left Side).

19- 03- 2001: Tracing the Left Side of the Eastern Face.

20- 03- 2001: Tracing the Left Side of the Eastern Face.

21- 03- 2001: Tracing the Left Side of the Eastern Face.

Starting the tracing of the Right Side of the Eastern Face

22- 03- 2001: Tracing the Right Side of the Eastern Face.

Completing the tracing of the Eastern Face, checking details.

Tracing the Southern Face of the rock.

At the Ahel-Ebdemmed site, three days (from 26-03 to 28- 03- 2001) were needed to trace all the represented motifs on the face of the rock alone. Again, it is important to report the fact that I personally expected that it would take not more than one and half days to carry out this task. If you are standing in front of the engraved surface of this site at a considerable distance (*e.g.* one and half or two meters) you will be able to discern the details of most represented motifs. But, the situation will be completely different if you start tracing from a very short distance (*i.e.* 0 to 1 centimetre for your hand and 10- 15 centimetres to one metre for your eyes).

While I was conducting the tracing process, I did not follow those researchers who used to cut or divide the plastic sheet into a number of small pieces for one reason or another (*e.g.* for economic reasons, or because some areas on the rock surface do not include any engravings). Instead, I used large sheets of plastic, several feet on a side each. The number and measurements of used sheets in tracing the represented motifs in each site can be shown in the following:

a) Foum Chor Site:

Face	*area of engraved surface*	*no. of used sheets*
Eastern	320 cm x 345 cm	Eight:
- Right Side:	165 cm x 150 cm	Four:
Right Portion		Two:
		(65 cm x 134.5 cm)
		(65 cm x 78.5 cm)
Left Portion		Two:
		(119.5 cm x 65 cm)
		(45 cm x 65 cm)
- Left Side	155 cm x 195 cm	Four:
		Two large:
		(65 cm x 195 cm)
		(65 cm x 195 cm)
		Two small:
		(38 cm x 65 cm)
		(34 cm x 65 cm)
Western	110 cm x 269 cm	Four Large:
		(65 cm x 155 cm)
		(65 cm x 167 cm)
		(65 cm x 107cm)
		(65 cm x 104.5 cm)
Northern	130 cm x 85 cm	Two: (65 cm x 106 cm)
		(65 cm x 103 cm)
Southern	75 cm x 66 cm	One: (78.5 cm x 66 cm)

b) Ahel-Ebdemmed Site:

Face	*area of engraved surface*	*no. of used sheets*
Only one face	130 cm x 380 cm	Three:
		Two large:
		(65 cm x 265.5 cm)
		(65 cm x 243.5 cm)
		One small:
		(65 cm x 81 cm)

My aim was to show the over all composition of the rock art represented in each site. In other words, the purpose of my tracing was to document the whole-engraved surfaces, making the most accurate possible copies of the represented motifs in relation to one another. In this regard, I mention another important problem I was confronted with at the site of Ahel-Ebdemmed. The engravings of this site occur on irregularly shaped surfaces. However, I did not choose the easy method by dividing my plastic sheet into a number of small pieces. Instead, I used enough of the plastic sheet, giving it the required space and placed it very carefully over the rock surface by using blue tack and masking tape (I was careful not to place these materials on top of the engraved representations).

In this regard, using large pieces of the plastic sheeting is a very difficult method to work with for a number of reasons. First, the engravings are executed on a vertical and not a horizontal surface. Second, during this relatively long period of tracing, I had to mount and dismount the same plastic sheet more than once to complete the process over several days' work. Because of the high temperature, replacing the same large piece of plastic sheet requires waiting for a considerable time to allow it to conform to its previous position on the rock face (*i.e.* to make the previously traced figures, the copy, coincide with the engravings, the original). Third, the materials used in sticking the plastic field sheet to the rock (*i.e.* the blue tack and masking tape) are negatively affected by a number of natural conditions such as the nature or the type of rock and the high temperature. Fourth, from time to time the wind started to blow up, causing the corners of the plastic sheet to move. However, facing such problems is, I believe, better than dividing the material into small pieces and facing probably unsolvable problems relating to the refitting of great numbers of field sheets manually or even mechanically.

I traced the engravings in black while cracks and other natural features were drawn in red using permanent felt-tipped marking pens. I used cotton wool and nail polish remover to wipe the ink away to correct probable mistakes. To control the light conditions, I used mirrors to reflect the sunlight on the engravings, or covered the part I was tracing with my shadow to avoid direct sunlight. Wearing sunglasses was, also, very useful in some cases not only to protect the eye from the reflection of sunlight from the plastic field sheet on the eye, but also to allow a better view of the

engravings that needed to be traced under natural light (*i.e.* direct sunlight). On the other hand, I was forced in some cases to delay or postpone the tracing of some engravings (at both sites), sometimes waiting for a better positioning of the sun. Another option, in the latter case, was to trace the other engravings on the areas or faces which were not exposed to the direct sunlight at that time.

There was no need to highlight even those engravings that were very difficult to discern for one reason or another (*e.g.* superimposition, poor conservation, subtle nature of the technique used, the very dark patination). Although I was equipped with special white pigment (potato flour) to apply in such cases, I avoided using highlighting in my tracing for two reasons. First and most importantly, to prevent minute damage to the engravings, even though applying the mentioned pigment is not currently believed to cause any damage and it is easy to remove very quickly without leaving any trace on the rock face. Second, according to Fossati and others (1990: 13) "the engravings are best seen in natural oblique light", hence, I chose to trace all the engravings under the natural light condition. I used mirrors, with the help of the researcher and local guides (see below), to deal with engravings that were difficult to discern and, consequently, I was able to trace them as objectively as possible. Since the tracing is "a literal reproduction of what is on the rock and should not include details which are not visible" (Sanger & Meighan 1990: 151), I did not attempt to come up with 'finished' or 'improved' tracings for the highly eroded and/or incomplete engravings (see, for example, Figs. 53a.2, 53a.8 and 71). In short, I did my best to trace the represented motifs of both sites as precisely as possible.

IV.2.9 Local researchers and guides:

It always helps to have another rock art researcher present while tracing. Indeed, this allows arguing through the many details, before and during recording. For example, s/he may see the art somewhat differently, and the arguments will be useful especially if s/he is familiar with the subjects and the manners of the art under discussion. In fact, I insisted on this during the time I spent in Nouakchott preparing for my field trip in the heart of the Mauritanian Sahara. Unfortunately, it was not possible to have such researchers since there are no specialised rock art researchers in the *Institut Mauritanien de Recherché Scientifique* (*IMRS*). It was also difficult to get any field

help from the Institute of Archaeology (UCL). I cannot deny the efforts made by the researcher that the *IMRS* supported me with. He played an important role in contacting local people and guides in the study area in addition to the ordinary help in the field. In some cases arguments took place during the tracing process until we reached agreement on specific minute features. Also, it was very important to discuss such details or features with the local guides who used to join me for a long period of time during the tracing process. This was of a significant importance simply because even a good tracer working alone will not produce a good tracing. In this respect Sanger and Meighan (1990: 125) believe that "observers at the site can see far more than researchers looking at [their drawings]".

From the intensive discussion of the methodology mentioned above, one can conclude that it is unrealistic to employ or rely upon only one method of recording rock art. For that reason, more than one method is used for transforming the engravings of both sites under investigation into graphics: the photographing, the frottage or rubbing (in some cases), and the direct tracing method. The major aim of employing these methods is to reproduce the represented motifs as they appear on the rock surfaces, and, consequently, to show them correctly in relation to one another regarding their size, shape, superimposition, in addition to their position on the rock surface with its all natural features (*e.g.* cracks, cavities, and natural fissures). Another aim is that relying upon more than one recording technique provides us with the required graphic data that make the comparison possible. Such comparison is of vital importance in recognising the forgotten minor details that were, or might have been, ignored or omitted, in addition to identifying the mistreated details or errors which are expected during the tracing process.

Chapter Three
The Need for a Guide of Animal Identification and Other Related Problems

I. Introduction:

The two sites analysed in this study have only engravings, which are dominated by animal representations and signs. The category of 'animal' rock art requires preparation prior to categorisation and ultimate interpretative analysis. Indeed, the identification of animal representations raises one of the most important questions in rock art studies: "Is there a set of minimum features which must be present before representations are so classified?" (Ucko 1977: 9).

In the light of what has been already said above, I will discuss in this chapter the minimum number of pointers that are required to suggest a positive identification of an animal representation. This discussion will be based upon zoological knowledge. I will also mention the most important problems that may occur in the classification of animal representations.

Specifying the minimum number of pointers, which are required for suggesting a positive identification, means that the researcher must examine the intrinsic characteristics of animal representations. According to Clottes (1989: 38), the intrinsic characteristics of animals are "the distinctive features of their shape and posture from where we form our mental images of them".

From this point of view, what the researcher needs is to specify the unarguable parts or the details that provide him or her with a solid basis for a positive identification. Hence, attributing specific animal characteristics to the studied animal representations requires a considerable accumulation of the zoological knowledge to guide the researcher in achieving this aim (*i.e.* specifying at least the minimum number of the pointers required for identification).

II. The Need for A Guide of Animal Identification:

Each animal species has specific defining physical characteristics that can be taken as pointers for its identification in nature. If we are able to specify the minimum number of these pointers then we will be able to identify what animals are probably represented and, consequently, classify them.

The task of attributing an animal representation to a particular animal, however, requires locating or relocating the characteristics that do not resemble other animal(s). In other words, this process requires specifying the unarguable parts or details that coincide with the typical form of a particular animal or that constitute unmistakable pointers of identification. If the researcher is able to accomplish this, then, it is possible to suggest a positive identification for most animal representations under investigation and, therefore, the data will be well prepared for the next stage of research (*i.e.* the interpretative analysis).

What needs to be emphasised in this regard is that the minimum number of the pointers for the positive identification of an animal representation must include a specific profile of the head beside the outline of the body. In this regard, I take into account the following assertion: "In order to typify the species it is enough to accentuate one or two features and create the appropriate head" (Lorblanchet 1989: 118). Compared with the other parts of the body, I believe that if the head of an animal representation is depicted in detail the researcher may be able to suggest a positive identification. In some cases, only the depiction of an animal head may be enough to make an identification. The so-called 'swimming' deer of Lascaux and the heads of aurochs and horses in the Chauvet Cave can be taken as outstanding examples in this regard (see, for example, Bahn & Vertut 1997: 73, 147). On the contrary, if an animal is depicted without a head or if the depicted animal lost its head, it is probably difficult to suggest a positive identification. If the artist, for one reason or another, depicted only the legs or the hindquarters of an animal, would it be really possible to distinguish to which quadruped this form belongs? Probably not.

Another important point that needs to be emphasised in this discussion is that, in some cases, it is possible to suggest a positive identification depending on specific aspects of animal behaviour (*i.e.* the stance or the posture of the represented animal). I agree with Clottes (1989: 43-45) that interpretation of posture involves a significant degree of subjectivity in the identification of an animal representation. But, animal behaviour as a pointer of identification will only be used in this research as a means to distinguish between very closely allied animal species (*e.g.* Canids). Epstein (1971a), for instance, gives an excellent example of using animal behaviour to identify the dog in rock drawings of the Western and Eastern Deserts of Egypt. In this regard, he wrote:

> It seems to have been a very primitive type, similar, possibly, to the present Berber dog; in the drawings it has a long body, long legs, prick ears, and the tail carried high over the back. The elevation of the tail appears to be one of the first effects of domestication.
>
> (Epstein 1971a: 52)

So, what is the minimum number of pointers to suggest a positive identification? These pointers can be defined in my research as follows:

The minimum number of pointers that is needed to identify an animal representation must include those parts that give an accurate image of a particular animal. Identification lies in the most obvious and unarguable details that allow the researcher to recognise the animal without any confusion. Suggesting a positive identification requires that the suite of minimum characteristics for a particular taxon are present in their entirety (or majority), with no significant suite of minimum characteristics for an alternate taxonomic identification being present.

III. The Pointers of Identification:

The following guide aims to support the researcher with solid grounds for the identification of animal depictions recorded in both sites of the study area. In the descriptions that follow, I have attempted to include the full range of the possible fauna that could be represented.

III.1Dogs and Allies (Canidae):

Most of these relatively long-legged, long muzzled carnivores have a bushy tail and compact feet (Kingdon 1997: 217). The elongated skull, long nose, and powerful mandibular muscles, the pointed and erect ears (Stains 1975: 5) are the most important features that characterise this family. The members of the genus *Canis*, however, are very closely allied to each other, and the distinction between them is not sharp (Zeuner 1963: 80).

III.1.1 Wild Dog (Lycaon pictus):

This is a large dog with round ears and powerful muzzle (Kingdon 1997: 226). The minimum characteristics for identification include the slender body, the long legs, the prominent round ears, and the tufted tail.

III.1.2 Pariah Dog (Canis familiaris):

This small, primitive dog is characterised by "prick ears, occasionally with drooping tips, a short smooth coat with somewhat longer hair on the underside of the tail" (Epstein1971a: 31).

III.1.3 Berber Dog (Canis familiaris):

This dog is a development of the previous type. It is characterised by large size, a bushy tail, a flat forehead, a short neck, and a compact body. Its neck, chest, posterior part of fore- and hind-legs, and lower part of the tail are covered with long hair. When the animal is running its tail, which is carried low, takes a straight form (*ibid.* 31).

III.1.4 Jackal (Canis sp.):

The jackals of Africa are represented by three species: Side-striped (*C. adustus*), Black-backed (*C. mesomelas*), and Golden (common) (*C. aureus*) (Bekoff 1975: 121). The large pointed ears; the long legs, the long narrow muzzle, and the bushy tail are the minimum characteristics for identification.

III.1.5 Fox (Vulpes sp.):

The foxes of Africa include the following species: Sand (*V. pallida*), Ruppell's (*V. ruppelli*), Cape (Silver) (*V. chama*), Red (*V. vulpes*), Fennec (*Fenneecus zerda*), and Bat-eared (Delandi's) (*Otocyon megalotis*) (Bekoff 1975: 121). The minimum

characteristics for identification of fox include the slender build, the long legs, the long bushy tail, and the extremely large ears.

III.2 Hyaenids (Hyaenidae):

The hyaena has long legs, long neck, large ears, blunt muzzle and short hairy tail. The feet are large, and shoulders are higher than the hindquarters (Kingdon 1997: 258). The minimum characteristics of identification can be represented as follows: the large size, rump lower than shoulders, the long pointed (or rounded) ears (*i.e.* the long pointed ears in the case of striped hyaena: *Hyaena hyaena*, and the rounded ears in the case of spotted hyaena: *Crocuta crocuta*).

III.3 Cats (Felidae):

Cats range from lions to little desert cats. All of them have a very similar body plan: the long body and the short rounded head (Kingdon 1997: 276). Among this family one can distinguish the following species:

III.3.1 Desert Cat (Felis libyca):

This cat is very similar to the domestic one, but in size it is slightly larger (Dorst and Dandlot 1970: 132, 136). Identifying characters include a long tail (often carried upright), pointed ears, and a plain coat.

III.3.2 Leopard (Panthera pardus):

This large cat has numerous dark spots on the back and upper limbs (Kingdon 1997: 282). The large size, the powerful build, the spots on the body, and the rounded ears represent the minimum characteristics for identification. Another useful identification characteristic is that the tail is about half of the total length.

III.3.3 Cheetah (Acinonyx jubatus):

This is a very slender cat with spaced, circular spots all over the body. The face is rounded and the ears are small (Kingdon 1997: 286). The minimum characteristics for identification follow: the relatively large size, the slender build, the spotted tipped tail, the round face, the short muzzle, and circular spots on the coat.

III.3.4 Lion (Panthera leo):
The lion is the largest of cats. The male develops a thick woolly mane (Kingdon 1997: 284). The minimum characteristics for identification are the large size, the long mane (in the case of male), the plain coat, and the tipped long tail.

III.4 African Equids (Equus):

All African horses are characterised by a big, long head. The neck is muscular and maned. The body is compact with a deep chest and muscular haunches. The strong legs carry hard single hooves (Kingdon 1997: 310). African Equids include the following species:

III.4.1 Zebra (Equus zebra):
Zebra are the only striped Equidae in Africa. They are large with a long narrow head (especially the muzzle), broad rounded ears, and a mane of stiff hairs along the neck (Dorst & Dandelot 1970: 159, 162).

III.4.2 Wild Ass (Equus africanus):
The wild ass is the wild ancestor of domestic donkeys. It has a short hairy brush to the tail, a mane, and long leaf-shaped ears (Kingdon 1997: 310). The ears and the erect mane can represent the minimum characteristics for identification.

III.4.3 Domestic Horse (Equus caballus):
The ancient African horses were of small size and elegant appearance, with compact forequarters and square well-set hindquarters. The head is relatively short, with a wide square forehead, straight profile and short alert ears. The neck is carried high and is furnished with an abundant, silky, sometimes curly, mane. The back is straight and short, the tail setting high; the chest is wide, and the flank is short. The legs are often fine, but straight (Epstein 1971b: 429). The minimum characteristics for identification include the relatively short head, the short ears, the silky or curly mane, the slender legs ending in broad hoofs, and the long hairy tail.

III.5 Bovids and Horned Ungulates (Bovidae):

These are all hooved, with hollow horns, and differ mainly in proportion and shape of face and horns.

III.5.1 Cattle (Bos sp.):
In most types, the males have short or large horns (lyre-shaped horns). Females, in some types, are also horned but their horns are usually smaller than those of the males (Kingdon 1997: 346). The female sex has substantial udders positioned between the back limbs, each with four teats (Clausen & Ipsen 1970: 110). Females may also be distinguished from males by their smaller size (Kingdon 1997: 347). In addition to the humpless longhorn and shorthorn types mentioned above, some breeds (*Bos indicus*) are distinguished by a hump. The humped cattle are characterised by a narrow body, long legs, and drooping rump (Epstein 1971a: 198).

III.5.2 African Buffalo (Syncerus caffer):
This large, heavy build, horned ungulate is characterised by low, wide skull with a short face. The thick horns splay out sideways from the skull. Its comparatively short legs (Kingdon 1997: 348) also distinguish this animal.

III.5.3 Eland (Targelaphus derbianus):
The size of this animal is extremely large with raised shoulder hump and dewlap on the throat. Both sexes have horns: they are larger in males (Stuart & Stuart 1997). Hence, the large size and the massive straight horns, with a close screw-like spiral, can represent the minimum characteristics for identification. The broad and expanded ears, the white stripes on both sides of the body, the short mane on the neck, and the hairs on the forehead can also be considered as additional useful identification characteristics (see Dorst & Dandelot 1970: 186).

III.5.4 Hartebeest (Alcelaphus buselaphus):
This antelope is medium sized, high shoulders, deep chest, long legs, short neck and a very long, narrow face (Kingdon 1997: 429). The minimum characteristics for identification of this animal include: shoulders much higher than rump, long narrow face, narrow ears, and short-haired tail. The horns (in both sexes) are very close together at the base. They curve forward, turning outward and then point backwards.

III.5.5 Topi (Damaliscus korrigum):
This large antelope has a long head and is similar in appearance to the hartebeest. The following characters may differentiate topi from the hartebeest: the long-haired tail, and lyrate, heavy ringed horns (Stuart & Stuart 1997: 152).

III.5.6 Kob (Kobus kob):
This antelope is medium sized, strongly built, short coat, long tail with a tuft. Only males have horns. They are thick and "strongly ringed, with a double curvature, rising at a marked angle from the head, bending backwards then forwards (when viewed from the side, they have the shape of the letter S)" (Dorst & Dandelot 1970: 210-11).

III.5.7 Bushbuck (Tragelaphus scriptus):
This spiral-horned, small antelope is characterised by a stocky build, with short neck and legs. Only males have horns. They are "twisted and very shallowly corkscrewed, triangular in cross-section with a prominent ridge, rising from just behind the eyes, almost in the plane of the face" (Apps 1996: 227-8). Additional useful identification characteristics include the large, broad ears and the long bushy tail with a tip (Dorst & Dandelot 1970: 189).

III.5.8 Reedbuck (Redunca redunca):
This medium-sized antelope has an unusual, bushy short tail. Only the male has horns. They are short but thick at their base. They are "ringed, evenly and widely divergent, curved backwards, then very sharply upwards and forwards forming hooks at their ends" (Dorst & Dandelot 1970: 215).

III.5.9 Gazelle (Gazella sp.):
This long-legged animal has a very slender body. It is also characterised by large ears and a very short tail (Kingdon 1997: 409-10). Both sexes carry simple horns, which may differ in their length and form from one sex to another and from species to another (*e.g. G. dama, dorcas,* and *rufifrons*).

III.5.10 Barbary Sheep (Ammotragus lervia):
The body of this animal is heavily built, the size is intermediate between a sheep and a goat, the legs are short, the face is long and tapered, the ears are small, and the tail is short. Both sexes have outward-arching horns: slender and rounded in females, thick, ridged and longer in males. Both sexes also have tufts of hair on the upper forelegs and a hanging fringe down the throat: it is denser and longer in males (Kingdon 1997: 444-5). Accordingly, the minimum characteristics for identification include a hairy fringe on throat, chest and front legs and the broad horns at the base (they are curved

back down and forward). Their heavy build, the well-haired short tail, and the short ears can be taken as additional useful characteristics.

III.6 Dromedary Camel (Camelus dromedarius):

The minimum characteristics for identification of the Arabian or dromedary camel include the long neck, the very long slender legs ended in broadened hooves, and the one hump on the back (see Bertin *et al.* 1967: 592-3).

III.7 Giraffe Giraffe (Giraffa camelopardalis):

Giraffes have tall shoulders and sloping hindquarters. They have a long neck and legs. The legs end in broad, rounded hooves. The neck is fringed with a short, thick mane and both sexes develop three 'horns' above the eyes. The face is strongly tapered (Kingdon 1997: 343). The minimum characteristics for identification include the long legs and neck, and the sloping back from shoulders to rump. Additional useful identification characteristics include geometrical dark patches over the body, and the short horns on the top of the head.

III.8 Elephants (Elephantidae):

These animals, which are classified as an Order by themselves, have enormous size and height. The nose, or trunk, is elongated (Dorst & Dandelot 1970: 155).

III.8.1 African Elephant (Loxodonta africana):

The African elephant has a long trunk, usually two tusks, large ears, and pillar or columnar legs with five toes (Kingdon 1997: 305). Accordingly, the minimum characteristics for identification must include the massive size, the long trunk, the wide ears and the two tusks in some cases.

III.9 Rhinoceroses (Rhinocerotidae):

Rhinos have a long body covered with very thick skin; relatively short, powerfully muscled legs; a short neck and massive head, armed with a nasal horn or horns (Kingdon 1997: 318). Generally, two types represent rhinos in Africa:

III.9.1 Hook-Lipped or Browse (Black) rhinoceros (Diceros bicornis):
The thick skin of this type forms inflexible plates over the shoulder, haunches, sides, forehead and cheeks. The head has a short forehead and the mouth ends in a sharply pointed upper lip (Kingdon 1997: 319). The minimum characteristics for identification, then, include the following: no hump on neck, the pointed upper lip, and the two horns on the snout. An additional useful characteristic is that the head is usually carried high off the ground.

III.9.2 Square-Lipped or Grass (White) rhinoceros (Ceratotherium simum):
The highest point behind the shoulder of this type is midback rather than the haunches. The head, especially the forehead, is long. The mouth is very wide, flat fronted and set low over the chin. The flexible neck forms a prominent hump when the head is raised (Kingdon 1997: 321). The minimum characteristics for identification are the broad, square muzzle, the hump on neck, and the two horns on face. The additional useful identification characteristics include the large pointed ears and the heavy head, which is carried only a few centimetres from the ground.

III.10 Hippopotamus (Hippopotamus amphibius):

The hippo has a vast rotund body and stumpy legs. The eyes, ears and nostrils are near the top of the head (Kingdon 1997: 325). The minimum characteristics for identification can be represented in the following: the barrel-shaped body, the short thick legs with four-toed feet, the massive head with broad muzzle, and the short, flattened tail, tipped with a tuft of hair.

IV. Why I may never know ... (The problems of Identification):

The problems of identifying representations at a rock art site are derived from the fact that we investigate not real photographs but drawings/paintings/carvings executed in different artistic styles or expressions. Even the so-called 'naturalistic' or 'realistic' styles do not necessarily allow an exact taxonomic identification. Hence, we can imagine how difficult it is to identify those executed in an abstract style. In such cases, the artist may reduce the required pointers of identification. In addition, more poorly executed representations and the degree of artistic skill may negatively affect

the identification process. The problems of identification of animal representations, therefore, can be presented as follows:

First Problem:

There are a number of animal depictions that do not provide the required details of identification. In some cases, the depicted animals are schematically executed or reduced in the extreme. Whether or not we view these animal engravings as simplified images the result will be the same: it is difficult to identify them with certainty to taxon.

Second Problem:

The artist, for one reason or another, may leave an animal depiction incomplete. Also, the condition of the rock surfaces (*e.g.* weathering, or recent vandalism) may destroy important parts of the represented animals. These unfinished and/or eroded animal depictions are also problematic. In such cases, it seems to be difficult to specify the minimum number of the pointers that may lead to suggest a positive identification.

Third Problem:

One can be easily misled by the fact that an animal depiction may change from culture to culture and from period to period. In this regard, Hodder gives an explicit example:

> In different cultures, people may draw animals differently because they pick out different characteristics of the animals as distinct and depict them in ways that appear to us to be distorted [...] What people say about their art may be different from what is observed.
>
> (Hodder 1982a: 174-6)

Fourth Problem:

Some times the artists might have deliberately represented animals in an obscure way. About this point, which makes the identification of animal representation more problematic, Clottes (1989: 33) states "prehistoric artists, on occasions, pursue ambiguity and play with the shapes".

Taking into account what has already been said above, it seems that most of the attempts to identify such animal depictions are no more than a tentative classification. I believe that it is better to classify this category of animal representations as 'animals of problematic identification' or 'indeterminate animals' rather than suggest a misleading or mistaken identification. According to my experience in the field (Pasparo and Capo di Ponte in the Italian Alps, and the Adrar Plateau in the Mauritanian Sahara), it seems difficult to give a positive identification for an animal representation in the following cases:

1- In the absence of the outline which constitutes the main parts of the represented animal
2- In the absence of the required details that illustrate the head of the represented animal
3- If the represented animal is highly reduced schematically
4- If the characteristic pointers include the minimum characteristics of more than one animal species

In conclusion, the identification process is one of the most important steps in rock art studies. I believe that it is the most important for the possible interpretation of the collected data. Identification of animal depictions depends on the intrinsic characteristics that give them their shape and enable us to form our rational pictures of them. We will not be able, in some cases, to specify all the required details needed for positive identification. Accordingly, our aim must be directed to signify the minimum number of the pointers that make misidentification more unlikely. Also, rather than suggesting an uncertain identification for an animal representation, for one reason or another, it is better to classify it only at the most precise level of taxonomic identification possible whether Canidae, Mammalia, or ' indeterminate animals'.

Chapter Four

Description of the Recording Work in the North of Atar – Mauritanian Adrar

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I. Introduction:

In this chapter, I give a description of the engravings found at both sites mentioned in Chapter Two. These descriptions will serve as the basis for detailed interpretative analyses in the following chapters.

The aim of this description is to work from isolated engravings to groups of engravings taking into account the styles and techniques employed and the way in which the rock is used for the engravings. Forms, compositions, correlations between engravings, patina and cases of superimposition will also be considered.

II. Description of the recorded engravings:

II.1 Foum Chor Site:

This site is situated at 20° 33' 48 latitude North and 13° 04' 30 longitude West, approximately two kilometres to the east of Azougi following the right side of Foum Chor road at the north of Atar. The site occupies a strategic position: it faces E-n-Tarazzi Mountain to the south, the Tayaret wadi to the north, and Azougi to the west (see Maps 11 and 12, and also Fig. 2a). The site consists of a vertical, large rock covered with engravings. It is located on the bottom of E-n-Tarazzi Mountain (56 metres from the foot of the Mountain). Accordingly, the site is a part of E-n-Tarazzi Mountain which extends about 12-13 kilometres from Azougi to Taizent. Moreover, the Foum Chor site delimits both the Tayaret wadi and the road of Foum Chor that is covered with sabkha (a depression formed by a palaeolake approximately 1,500 metres length and 400 metres width).

The positioning of the large boulder featuring the engravings, which is supported upon a number of pedestal sandstone pieces, in isolation, gives the impression that it is anthropic (Figs. 4, 5, 6, 7, 8, 9, 23, 24, 26, 27, 29, 37 and 38). From the geological point of view, however, this large boulder is likely to be an outcrop of the same material as E-n-Tarazzi with weathering having separated the two (see Figs. 3, 4, 5, 11, 12, 13, 14 and 45). In his discussion on the "Geographical Profile" of Mauritania, Gerteiny (1967) explains:

> The cliffs of Tichitt and Oualata, and those of Adrar, Tagant, and Hank, present a distinctive topographic feature, rising above hundreds of miles of monotonous flatness. Apparently these cliffs belong to the same system as the Taoudeni syncline, although separated by hundreds of miles. There are traces of dry river beds near the plateaus. In unusually rainy years, such as 1951, these old river beds may be inundated by tumultuous torrents that last from one to five weeks. Water is not the main cause of the erosion that takes place; drastic temperature changes and high winds are more serious factors. Homogenous rocks explode and heterogeneous ones disintegrate when they are heated to temperature well above 200° F. by the sun, then cooled abruptly at night when temperature drop below 45° F. The multitudinous layers of fallen rocks encumbering the bases of plateaus bear witness to this phenomenon. Since the wind in Mauritania is mainly a surface southwesterly and blows at the bottom of elevated areas, it is less damaging than the extremes in temperature.
>
> (Gerteiny 1967: 6)

Taking into consideration the foregoing statement, the positioning of the large boulder featuring the engravings can be explained in the light of the natural agents or the geological events that took place at Foum Chor. The large size (Figs. 18a, 24a and 47a) or the big mass of the rock (Figs. 3, 4, 5, 13, 14, 15, 19, 20, 23, 24, 26, 27, 29, 30, 46, 47, 48, 49 and 54) in addition to the positioning of other rocks scattered on the bottom of E-n-Tarazzi Mountain (Figs. 10, 12, 25 and 45) - all these features do not give the indication of an anthropic positioning of the engraved boulder. Similar to hundreds of thousands of the fallen rocks which differ in size, the large boulder under discussion separated from E-n-Tarazzi Mountain which shattered and still shatters as a result of drastic temperature changes. The power of explosion, then, is probably responsible for placing the separated rock (boulder) on the foot of mountain in this astonishing positioning (which seems anthropic apart from the act of natural agents). The positioning and the distinguished shape of the separated rock (Figs. 4, 5, 10, 14, 18, 19, 23, 24, 26, 27, 45, 46, 47 and 49) probably were among the reasons that led

the engravers to choose this medium for placing their depictions. The engravings cover the four faces of the rock. Except for a very few broken quartzite cobbles, the site survey yielded no cultural materials.

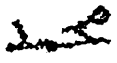
II.1.1 Northern Face:

The Northern Face, which is almost vertical, has a rough surface. The dimensions of this face are 370 cm in length and 150 cm in breadth, the area of the engraved surface being 130 cm in length and 85 cm in breadth (Fig 47a). The engraved surface itself has a concave shape (Figs. 12 and 13). There is no prior preparation of the engraved surface. Engravings on this face of the rock include both Arabic inscriptions and signs. Neither animal nor human engravings are represented on this face of the rock (Figs. 14 and 15).

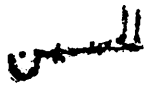
II.1.1.1 Arabic Inscriptions:

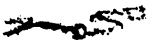
There are four Arabic inscriptions engraved on this side of the rock. All of them have very light patination. The engraver employed a pecking technique to place them in the central part of the rock. The technique, quality and common characters suggest that they may have been done by the same hand.

The four Arabic inscriptions on this face of the rock represent three Arabic names or signatures in addition to the name of Allah (Fig. 16). From top to bottom they are as follows:

1-  (Muhammad) (Fig. 16a.1).

2-  (Allah *i.e.* God) (Fig. 16a.2).

3-  (el-Hussein) (Fig. 16a.3).

4-  (Muhammad) (Fig. 16a.4).

II.1.1.2 Signs:

In addition to the above inscriptions, the Northern Face has also four engraved signs. They are pecked on the rock surface and are all lightly patinated. From top to bottom, these signs appear as follows:

1-  (Fig. 16a.5).

2-  (Fig. 16a.6).

3-  (Fig. 16a.7).

4- (Fig. 16a.8).

The first sign consists of two parallel lines traversed by a vertical line. The second one resembles a capital "T" with a drooping cross-bar. The third sign is a horizontal line ending to two diverging lines on the right hand side whereas the fourth resembles an irregular "U". According to their position on the rock surface, it seems to be that the engraver(s) attempted to place each sign at a considerable distance from one another (Figs.15 and 16). Even though these signs could be seen as isolated motifs, their arrangement suggests a possible relation. In regard to their placement on the rock surface, one may easily discern that the first and fourth signs are in the same vertical row, while the other two are in the same horizontal row. The four engraved signs seem to be situated along the cardinal directions: North, South, East, and West.

All in all, the engraved area of the Northern Face is in a good state of preservation, as only its lower part displays exfoliation effects.

II.1.2 Southern Face:

The surface of this vertical face is very rough (Figs. 20 and 21). Its dimensions are 310 cm in length and 168 cm in breadth (Fig. 18a), while the engraved area itself is 75 cm in length and 66 cm in breadth. The rock surface, including the area in question, is very flat. As in the Northern Face, there is no prior preparation of the rock surface (Figs. 18 and 19).

As far as the engravings are concerned, they include Latin letter inscriptions as well as signs. Neither animal nor human engravings are represented on this face of the rock (Fig. 20). The pecking technique is employed as the mode of execution. It is not plausible to attribute these signs and the Latin letter inscriptions to the same age since the patination of the latter is lighter than that of the signs.

The Latin letter inscriptions delineate the phrase: "*VI^e SIECLE*" (the sixth century) (Fig. 22a.1). Further below, next to this phrase, there are two signs. From left to right we can find the following:

1-  (Fig. 22a.2)

2-  (Fig. 22a.3)

The first sign is that of a capital "U" while the second one is roughly a circle with two lines.

What is remarkable in this face is that the engravers of the Latin letter inscriptions and other signs probably used the natural features of the rock surface to 'punctuate' them. In the case of the Latin letter inscriptions, the engraver used the natural fissure, which split the rock face in two, to separate the word "*VI^e*" from the word "*SIECLE*". Similarly, this natural slit in the rock surface is employed as a "partition" between the two signs (Fig. 21).

In addition to the above engravings, the Northern Face of the rock displays fairly recent attempts to engrave the rock with no success. These unpatinated "engravings" provide evidence of their chronological posteriority. They consist of peck marks and some Latin characters with an "A" and an "S" being legible (Fig. 22a.4).

As to the state of conservation, this face of the rock displays effects of exfoliation in the upper left, middle and lower right parts in addition to a strong vertical fracture situated in the middle of the rock face (Figs. 19 and 20). I believe that this split in the

middle of the rock will expand on the long term to cause the rock to fall off and, consequently, destroy the whole site.

II.1.3 Eastern Face:

The Eastern Face has a rough surface. Its dimensions are 370 cm in length and 345 cm in breadth (Fig. 24a). Because of its irregular surface, the engraved area can be divided into Right and Left Sides (Figs 23, 24, 26, and 27). The dimensions of the engraved area of the Right Side are 165 cm in length and 150 cm in breadth, while those of the Left Side are 155 cm in length and 195 cm in breadth. The Right Side itself is naturally divided into two parts or portions that give this side, which is almost vertical, a concave shape (see Figs. 29 and 30). On the other hand, the Left Side, which is vertical, has only one flat surface (Figs. 26 and 27). Similar to the Northern and Southern Faces described above, there was no prior preparation of the engraved area of this face (*i.e.* the rock surface is not smooth but rough and there is no evidence that polishing or any other technique of preparation has been used).

As to the engravings, signs are the main subjects of rock art on this face, and both animal and human representations are entirely absent (see Figs. 28, 31, and 32). These engraved signs, particularly those of the Right Side, are carefully done. The majority of Left Side signs show medium patination, while all those of the Right Side have light patination. In some cases, a number of signs seem to be arranged in horizontal rows (see for instance Figs. 26, 28, 30, 36 and 39).

II.1.3.1 Signs on the Right Side:

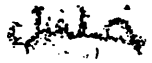
This side provides some pecked signs, all of which share the same light patina. The position of these signs on the rock surface does not allow one to discern them as isolated motifs. It seems that the engraver(s) attempted to place or arrange them, probably, in horizontal rows from left to right or *vice versa* (Figs. 30, 31 and 31a). The characters which comprise these signs can be presented as follows:

	Sign	No. of Occurrences	Figure No.
1-		2	31a.1, 31a.5
2-		4	31a.3, 31a.10, 31a.19, 32a.19
3-		1	31a.8
4-		6	31a.11, 31a.12, 31a.15, 31a.16, 32a.13, 32a.20
5-		8	31a.9, 31a.20, 32a.2, 32a.4, 32a.8, 32a.11, 32a.17, 32a.22
6-		2	32a.3, 32a.18
7-		2	31a.6, 32a.10
8-		1	31a.7
9-		1	31a.13
10-		1	31a.24
11-		1	32a.5
12-		2	31a.21, 32a.12
13-		1	31a.22
14-		1	31a.23
15-		1	31a.2
16-		1	31a.4
18-		1	31a.18
19-		1	32a.7

20-		1	32a.9
21-		1	31a.17
22-		1	32a.14
23-		1	32a.23
24-		2	32a.16, 32a.21
25-		1	31a.14
26-		1	32a.6
27-		1	32a.15
28-		1	32a.24
Total		47	

II.1.3.2 Arabic Inscription:

In addition to the engraved signs shown above, there is an Arabic inscription lightly scratched above the signs (Fig. 34). It seems that the engraver used a stone in an attempt to scratch rather than peck the rock surface. As a result, the scratches are not deep enough to show much contrast in coloration compared with that of the rock surface itself. This circumstance may lead one to believe that this inscription has dark patination, but in fact it does not. However, this unpatinated inscription suggests a very recent age. It consists of two words: خلود الله that mean "Immortality of Allah". It is noteworthy that it occurs at the highest point of all four engraved faces of the site (Fig. 33). This may be of significant importance whether or not we view this inscription as an act of vandalism.

 (Khalil) is another Arabic inscription pecked on this side of the Eastern Face (Figs. 30, 32, 32a.1 and 33). This Arabic (male) name or signature, which has light patination, can easily be spotted in a lower point at the far left of the Arabic

inscription described above (Fig. 30). It also lies in a higher point directly above the signs of the Left Portion of the Right Side of the same face (Fig. 33).

II.1.3.3 Other:

In addition to the signs, there is a great number of isolated peck marks. Most of them are concentrated on the lower part of the Right Portion of this side (Fig. 31), while they are randomly distributed on the whole engraved surface of the Left Portion (Figs. 32).

II.1.3.4 Signs on the Left Side:

Compared to the signs of the Right Side, these pecked signs have a medium patination and a considerable number of characters. An inventory of the signs of this side is as follows:

	Sign	No. of Occurrences	Figure No.
1-		8	28a.1, 28a.7, 28a.14, 28a.22, 28a.27, 28a.36, 28a.37, 28a.45
2-		2	28a.3, 28a.35
3-		1	28a.4
4-		3	28a.6, 28a.40, 28a.41
5-		1	28a.8
6-		20	28a.9, 28a.10, 28a.11, 28a.13, 28a.15, 28a.16, 28a.17, 28a.18, 28a.19, 28a.20, 28a.25, 28a.29, 28a.30, 28a.31, 28a.38, 28a.39, 28a.49, 28a.50, 28a.52, 28a.53
7-		1	28a.24
8-		1	28a.26

9-		2	28a.32, 28a.33
10-		1	28a.42
11-		1	28a.43
12-		1	28a.44
13-		1	28a.46
14-		1	28a.54
15-		3	28a.12, 28a.47, 28a.48
16-		1	28a.51
17-		1	28a.28
Total		49	

Compared to the other signs of this side of the rock, the inverse U character is the most common sign. Nine out of twenty signs are well organised in three horizontal rows (Figs. 27, 28, 28a and 39). The first row is consisted of two signs; the second includes four, while three signs constitute the third row. What is remarkable is their arrangement around two dark patinated cross-lines (Figs. 28a.23 and 36). Three of these signs (Figs. 28a.17, 28a.29 and 28a.31) superimpose one of the two cross-lines.

The possible relation(s) between the represented signs of this side of the Eastern Face of the rock can be illustrated by two further examples. To the left of the lower part, there is a group of signs of different characters (*i.e.* capital U, inverse U, capital W or two connected U) which are carefully organised in a horizontal row (Figs. 28a.39, 28a.40, 28a41 and 28a.42). To the bottom of this group, there are two signs of different characters (a circle with a dot in the middle, and an oval shape probably with rays on top) placed in the same line (Figs. 28a.43 and 28a.44). The second example shows another group of signs to the right of the other one already mentioned above.

This group includes signs with different characters: a circle (fig. 28a.4-6), a capital "T" with a dotted curved head (Fig. 28a.46), inverse and irregular "U"s overlapping each other (Figs. 28a.49, 28a.50, 28a.52 and 28a.53), and a vertical line crossing two inverse irregular "U"s (Fig. 28a.51). The overlapping of some of these signs and the line that connects a number of them to each other could be taken as evidence for a relationship between these individual signs.

II.1.3.5 Latin Letter Inscriptions:

On top of this side of the Eastern Face, we can roughly discern a Latin letter inscription with lighter patination. It consists of two words: "VIVE CHEIKA" (Long live Cheika) (Figs. 26, 27, 28, 28a.5 and 36). To the left of this inscription, there are two Latin letters: "S" and "I" in close proximity (Fig. 28a.2).

II.1.3.6 Other:

In addition to the signs and Latin letter inscriptions, two pecked, spiral motifs with dark patination are present but there are no indications that allow us to describe or identify them as zoomorphs (*e.g.* serpents) Rather, these appear to be purely geometric motifs (Figs. 28a.21, 28a.34).

Among a substantial number of stones of different size, there is another engraved rock approximately ten meters on the left-hand side of the Eastern Face (Fig. 42). This rock is placed on the ground in a horizontal position and has a rectangular shape (Fig. 44). The rock surface is roughly smooth but there are no indications for any prior preparation. On this horizontal surface there is only one engraving consisting of an Arabic inscription which lies to the right of the upper part. This inscription is carefully abraded and shows an Arabic name: زايد (Zaid) (Fig. 44). The unpatinated engraved name indicates a recent date. This Arabic male name is derived from the verb 'to increase'. Hence, it refers to the man who has good qualities, attributes, or even properties that exceed those other persons have.

II.1.4 Western Face:

This vertical face has a smooth surface (Fig. 46, 47). Its dimensions are 370 cm in length and 269 cm in breadth (Fig. 47a), whereas the area of the engraved surface is 110 cm in length and 269 cm in breadth (Fig. 47a). There are many irregularities and cavities of different size randomly scattered on the engraved face (Figs. 54, 55, 56, 63, 66, 71, 72, and 74). In some cases, these deep cavities, which are natural not artificial, cover the represented motifs (see for example Figs. 58 and 62). Although it seems that the engravers chose with much care where their work should be placed on the rock surface I do not believe they intended to use these cavities as a component of their artistic composition. In this regard, I argue that the cavities that cover the body of some represented animals, with special reference to bovids, are not used to show their coat pattern. This can be supported by the fact that some of these 'natural' cavities are also randomly scattered on the engraved rock, and occur in areas not covered with any engravings (see Figs. 62, 63, 66, 71, 72 and 74).

As to the state of conservation, the top and lower parts of this face show fissures, which may lead to the deterioration of the engravings in the long and short-term (Figs.47, 49, 53, 55, 57,60, 66 and 68).

As to rock art, this face of the rock displays a considerable number of engravings on its lower part (Figs. 46 and 47). It is striking that the Western Face is the only one that has animal representations. The technique, style, patination, and represented elements indicate that the engravings are not of the same age. Cattle (the large bovids) are the most prominent depictions, but signs are also abundant. Apart from cattle representations, the more the abstraction of the depicted animals increases the more their aesthetic quality decreases.

For the purpose of this description, the engravings of the Western Face can be divided into three main categories: animal representations, signs, and Arabic inscriptions.

II.1.4.1 Animal representations at Foum Chor site:

All depicted animals appear to be static and are shown in profile, though three of them have all four legs (Figs. 53a.10, 53a.12, 53a.14, 53a.16, 53a.18?). This zoomorph category can be divided into two sub-categories: complete animals and eroded or unfinished animals. Likewise, these engravings can be subdivided into identifiable and indeterminate animals. The total number of the engravings of this zoomorph category is eighteen. An inventory follows:

Complete animals	(13):	Identifiable (10)	Indeterminate (3)
Eroded or Unfinished animals (5):		Identifiable (4)	Indeterminate (1)

Below, I give a description of these zoomorphic engravings classifying them under the following two sub-categories:

II.1.4.1.1 Identifiable animals:

In what follows I give a detailed description of the fourteen depicted animals which, as I believe, represent the required pointers that make a positive identification possible.

II.1.4.1.1.1 Antelopes (Topi) (Fig. 53a.13):

Although this medium patinated, fully pecked animal is superimposed on two animal depictions (Figs. 53a: 12 and 14) and is superimposed by one zoomorphic representation (Fig. 53a.15) (all of which have the same medium patination and are done by the same technique), it is possible to discern a number of useful identification characteristics. The represented animal is heavily built. It has a short and thick neck, a long narrow face, high shoulders, and long legs. It is not likely that this zoomorphic figure represents an eland since the depicted horns are not "large, massive, slightly diverging and lying backwards in line with profile of the face" (see Dorst & Dandelot 1970). Also, the represented horns, in addition to the other characteristics mentioned above, do not fit those of the bushbuck, reedbuck, or even the kob (see Chapter 3).

One may identify this high-shouldered, sloping backed, long-legged, narrow-faced zoomorphic figure as a hartebeest. This could be acceptable if the depicted horns, which really seem to be very close together at the base, were "doubly curved, first rising outwards or backwards, then curved outwards, or forwards and upwards outwards, finally bent abruptly backwards or upwards" (*ibid.* 220). Again the most important characteristic which is needed to identify the depicted animal in this case as a hartebeest is that the horns must be curved forward to a greater or lesser degree, turning outwards and then pointing backwards. The lyrate horns, which are "rising vertically and curving evenly backwards as they diverge, and their tips are slightly recurved up-wards" (*ibid.* 226), allow us to identify this figure as a topi and not a hartebeest.

II.1.4.1.1.2 Cattle (Figs. 53a.1, 53a.2, 53a.3, 53a.4, 53a.5, 53a.6, 53a.7, and 53a.9):

Engravings of cattle or large bovids are the most frequent type on the Western Face of the rock (Figs. 51 and 52). Apart from an unfinished bovid, which is represented facing the East (Fig. 53a.9), these humpless cattle are represented facing the West. Five out of eight of the cattle show long horns (Figs. 53a.4, 53a.5, 53a.6, 53a7 and 53a.7). In the case of the other three cattle (Figs. 53a.1, 53a.2 and 53a.3), one can not discern any traces of engraved horns, the reason being that the first two engravings are highly weathered while the head of the third bovid seems not to be finely executed (Fig. 64). The represented horns are depicted with care and pictured in front view whereas the body of the animals is shown in profile (Figs. 58, 59, 60 and 62). Both horned and hornless cattle on this face of the rock do not bear any symbol (*e.g.* dots, circles or discs) between their horns or anywhere else above the head. It is also noteworthy that all the cattle are depicted without collars on their necks. They do not give any sense of movement. According to the technique and size the depicted cattle can be divided as follows:

II.1.4.1.1.2.1 Pecked (outlined) cattle of large size (Figs 53a.1, 53a.2, 53a.3, 53a.4, and 53a.5):

There are five cattle engravings of large size each of which is *ca.* 70 cm in breadth and 55 cm in length and has the same dark patination. They appear in profile and are shown in two rows facing the West.

It was very difficult to discern the peck marks of the two cattle engravings that constitute the second row (compare Fig. 51 with Figs. 68, 69 and 71 in an attempt to discern the peck marks of the engraved cattle). So, they are either crudely pecked or strongly eroded and, in any case, are superimposed by other engravings and signs. These conditions make them seem more ancient than other represented cattle and, consequently, may lead one to suggest that they imply an older phase of the bovidian engravings of the Western Face.

The first two cattle engravings of the first row (Figs. 53a.3 and 53a.4) seem to constitute one scene. This is supported by the fact that the back leg of the first animal is connected with the front leg of the second (Figs. 51 and 52). The reason for excluding the third bovid of the first row (Figs. 53a.5) from the scene is that it is executed in a relatively thin pecked outline (which is finely but partly rubbed or abraded to form a smooth or polished groove: Figs. 58, 59, 60 and 61) while the other two cattle are done in a thick pecked outline (which is not finely polished) (Figs. 62, 63, and 64).

Taking into account the care in execution and the technique used, it would be plausible to suggest that the two connected bovids were done by the same "less-talented" hand. It is significant to note that the bovid executed in a relatively thin pecked outline has a slightly different design of horns, which resemble a spheroid or an inversed "C" (compare Figs. 60 with Fig. 63).

Significant details such as eyes (Figs. 53a.4, 62 and 63) and primary and secondary sexual organs (two males and one female sex) are carefully emphasised (Figs. 53a.3, 53a.4 and 53a.5). The one of female sex (Figs. 53a.5 and 58) has two small udders.

The bodies of two cattle of this group (Figs. 53a: 4 and 5) are not filled with lines, while those of the other three cattle (Figs. 53a: 1, 2 and 3) displays vertical lines that may aim to add specific details. These linear designs could be taken as an indication of ownership or simply used as ornamental designs.

All the depicted cattle of this group are superimposed by signs. Some of them are pecked and have the same dark patination while the rest are pecked and abraded and have light patination. The majority of the signs consist of the characters of an inverse "U" and "C" in addition to a very limited number of other signs of different characters (see the signs of the Western Face below). Noteworthy is that none of these signs are superimposed upon the heads of the cattle. Apart from the head, the superimposition of the signs is not limited to a specific part of the body of the represented bovids (see Fig. 53b). The following table shows the distribution of these superimposed signs (* indicating a superimposition):

Figure no.	Head	Neck	Shoulder	Back	Torso	Belly	Loin	Rump	Hip and thigh	Tail	Front leg	Back leg
52a.1	-	-	*	-	*	*	*	*	*	?	?	?
52a.2	?	-	*	*	*	-	*	*	*	?	?	?
52a.3	-	*	*	-	*	*	-	-	-	-	-	-
52a.4	-	*	*	*	*	-	*	*	*	-	-	*
52a.5	-	?	*	*	*	*	*	-	*	*	*	*

(Table 4)

The distribution of signs superimposed on cattle depictions

II.1.4.1.1.2.2 Pecked cattle of Small size (Figs. 53a.6, 53a.7 and 53a.9):

The Western Face of the rock comprises further three cattle depictions. Compared to the represented cattle described above, the depicted bovids of this group are characterised by a smaller size though they share the same dark patination. According the technique employed the shape of horns, and animal orientation this category can be divided into two:

II.1.4.1.1.2.2.1 Pecked (outlined) cattle of small size with partly pecked body (Figs. 53a: 6 and 7):

This sub-group consists of two cattle depictions facing the west. They are very carefully executed small-sized engravings; each of them is *ca.* 30 cm in breadth and 20 cm in length. Their outline is firstly pecked and then finely rubbed or abraded to form a smooth or polished groove, while the body is fully pecked except for a square on the hip (Figs. 65, 66, 67). The technique of execution suggests that the engraver paid much attention to show the coat pattern of the two represented bovids. What is interesting is that the shape of horns differs from that of the other horned cattle represented on the Western Face. While the latter have long horns curved first outwards and then inwards (C-like shaped long horns), the two cattle of this sub-group carry lyre-shaped long horns. The male sex organ of one of these small size cattle is clearly shown (Figs. 53a.6, 65 and 66). Unfortunately, two recent engravings (mainly an Arabic inscription and a sign) are superimposed upon one of the engraved bovids (Fig. 53a.7). Although it is not possible to discern the sex organ of the represented bovid, one may identify its sex as a bull taking into account two facts. First, the bovid engraving does not show any evidence for substantial udders positioned between the back limb(s). Second, the depicted bovid is similar to the other one (Fig. 53a.6) in the form and general design, though it is of a slightly smaller size. Depending on the difference in size of the represented animals, however, should not be taken as a reliable criterion for distinguishing their sex. Thus, it seems risky for one to identify the bovid under investigation as a cow depending on the slightly small size compared with the other clearly represented bull.

II.1.4.1.1.2.2.2 Pecked (outlined) cattle of small size (Fig. 53a.9):

This sub-group includes only one bovid representation. Contrary to the other two small size cattle described above, this unfinished small size bovid (*ca.* 30 cm in breadth and 20 cm in length) is depicted facing the east. The body is executed in only pecked outline while the head of the represented animal carries U-shaped long horns. Two animal engravings superimpose on the bovid of this group: a light patinated equid (Fig. 53a .10) and a medium patinated dromedary (Fig. 53a.11).

II.1.4.1.1.2.3 Discussion of classification of the cattle representations:

Bearing in mind the above, I discuss here the possibility of classification of the represented cattle on the Western Face in the light of a number of different criteria. This will include patination, the technique used, care in execution, the number of represented legs, size, shape of horns, and coat pattern.

II.1.4.1.1.2.3.1 Patination:

The degree of patination could not serve this purpose as all the represented cattle have the same dark patina.

II.1.4.1.1.2.3.2 Technique:

According to the technique used the cattle can be classified as follows:

- The first group is depicted with relatively thick, pecked outline (Fig. 53a: 1, 2, 3, 4 and 9).
- The second group is represented with relatively thin, pecked outline, which is partly rubbed or abraded to form a smooth or polished groove (Fig. 53a.5).
- The third group is executed in pecked outline, which is rubbed or abraded to form a polished groove, and partial pecking of the body (Figs. 53: 6 and 7).

II.1.4.1.1.2.3.3 Care in execution:

The care in execution does not provide a precise criterion for distinction since two pecked (outlined) cattle of the first group (Figs. 53a.1 and 53a.2) are not well-preserved. Care in execution could be useful only in distinguishing between no more than two presented cattle of the first group (Fig. 53a: 3 and 4) and the bovid of the second group (Fig. 53a.5). The latter engraved bovid, in this case, seems to be well-executed compared with the other two. On the contrary, we cannot apply such a criterion in differentiating the represented cattle of the second and third groups (Figs. 53a: 5, 6 and 7) given that all of them display a high quality of execution.

II.1.4.1.1.2.3.4 Number of legs:

Apart from the highly eroded and the unfinished bovid depictions (Figs. 53a: 1, 2 and 9), the number of represented legs is not helpful in classifying the depicted cattle since all of them show only two.

II.1.4.1.1.2.3.5 The Size:

According to their size, the represented cattle fall into two categories: cattle of small size: *ca.* 30 cm x 20 cm (Figs. 53a.6, 53a.7 and 53a.9), and those of large size: *ca.* 70 cm x 55 cm (Figs. 53a.1, 53a.2, 53a.3. 53a.4 and 53a5).

II.1.4.1.1.2.3.6 The shape of horns:

Regarding the shape of the horns, cattle depictions can be classified in two groups. The first group includes three hornless cattle; all of them are of large size and done by pecking technique (Figs. 53a.1, 53a.2 and 53a.3). The second group includes five long-horned cattle. According to the represented horns, the cattle of this group can also be classified in three sub-groups. The first sub-group is represented by two cattle engravings with inverse "C"-like horns (Figs. 53a.4 and 53a.5). The second sub-group includes only one bovid representation with "U"-like horns (Fig. 53a.9). The third sub-group includes two cattle depictions with lyre-like horns (Figs. 53a.6 and 53a.7).

II.1.4.1.1.2.3.7 Coat pattern:

The coat pattern of the represented cattle may offer another criterion for classification given that the markings of the bovids' coat seem to be different. While three of the represented cattle have no coat markings (Figs. 53a.4, 53a.5 and 53a.9), three have a vertical line coat (Figs. 53a.1, 53a.2 and 53a.3), and two have a small square on the hip (53a.6 and 53a.7). Thus, the represented cattle can be classified as follows: cattle with undecorated coat; cattle with decorated coat where the decorated designs consist of vertical lines or stripes on the front and/or middle parts of the body; and cattle with a coat decorated by pecked patterns giving the impression of three-dimensional relief. These cover the body except for a square on the hip.

II.1.4.1.1.3 Canids (Fig.53a.17):

Among the depicted representations there is a unique animal engraving (see Figs. 53a.17, 74, 75 and 76). It is difficult to properly discern the depicted animal without a careful investigation of the rock face because it is a very small engraving compared to all the other represented motifs of the Western Face. It is 4 cm in breadth and 2.5 cm in length (excluding a 1.5 cm tail above the back). It lies directly below the head of another animal depiction (Fig. 53a.16) and to the left of an engraved sign with inversed U character (53b.10). Although the engraved animal is depicted in a very schematic style it displays certain characteristics that make its identification possible. First, the slender body, long legs, long pointed muzzle, and erect tail constitute the most important features to identify this engraved animal as a canid. Second, the erect tail that rises high above the body takes the identification further, as the 'elevation' of the tail of the engraved canid allows us to identify it as a dog. Third, the large size (see Fig. 76), short neck, compact body, and straight form of the tail may help us to identify the type of the represented canid as a Berber dog. This identification can be confirmed by the fact that the engraver did not show any other additional characteristics, like ears, that may be useful to suggest another positive identification for the type of the represented dog. For example, if the artist depicted large round ears this would suggest a wild dog but if he showed prick ears with drooping tips this would suggest a pariah dog. The artist employed different techniques of execution. The head, the body, the tail and the back legs of the represented canid are done by pecking, while the front legs are executed by scratching and pecking (Fig. 76).

II.1.4.1.1.4 Hyaenids (Fig. 53a.18):

This zoomorphic figure, which appears in profile and is facing the West, is pecked and then heavily abraded on the rock surface and has a light patination. It is executed in a very schematic style where the head and back are represented by one line only. The legs are represented by four crude lines: the first two are straight and very close to each other, while there is a considerable space between the third one, which is also straight, and the fourth one which is slightly curved. The position of the fourth leg gives the impression that the artist attempted to illustrate the animal in a lively stance. This can be confirmed by a raised tail with tuft or tip to the end.

I argue that a design consisting of two connected inverse vertical U's overlapping the middle part of the back, is not a part of the represented animal (Fig. 53b.81). First, the depicted animal is heavily abraded compared to the design which is also executed by the same technique. Second, the depicted animal shows a slightly lighter patination compared to that of the design under investigation. If so, one can conclude that the zoomorphic figure was added later below the design not *vice versa*. Third, one can discern another design which has almost similar characters. It lies directly to the left of the design under investigation, and consists of five connected inverted "U"s with dark patination (Fig. 53b.80). Both designs are classified in my description as signs (see below and Fig. 53b).

The pointers given above are adequate to exclude a number of animals from our attempt to identify the represented animal. The features by no means resemble those of the canids, equids, camels, bovids and horned ungulates, gazelles, Barbary sheep, giraffes, elephants, rhinoceroses, or even hippopotamus (see Chapter 3). Nevertheless, the identification of the depicted animal remains problematic. Could it be identified as a hyaena or a felid (a large cat)? It is a matter of fact that all the large cats have a tail with tip. In the case of the leopard this tipped tail is about half of the total length; it is long and bushy-tipped in the cheetah, and is rather long with a tuft in the lion. The length of the tail of the represented animal, on the other hand, does not allow us to identify it as one of these large cats. Another important reason is that the general shape of the body does not seem to represent any of the felids mentioned above (see Chapter 3).

In this engraving, the sloping back appears to be highly characteristic where the posture of the animal gives the impression that its shoulders are higher than the rump. This important feature is of great significance in the identification of this animal as a hyaena. Also, the short brushy tail, which constitutes the second pointer, is raised and this is another feature that signifies the aggressive posture of the spotted hyaena (*Crocuta crocuta*).

II.1.4.1.1.5 Camelids (Fig.53a.11):

This engraved animal shown in profile is also executed in a schematic style. Compared to the dark patinated bovid engravings, this depicted animal has medium patination. It is clear that the artist has employed both pecking and abrading techniques. As a result, the artistic production appears as a silhouette of the animal. The engraver used the 'U technique', which depends on the U-like shape, to illustrate the different parts of the animal body (Fig. 72). The neck, front and back parts of the animal body (including the tail) are represented by two irregular "U"s, while a third "U", which is connected with the other two "U"s, represent the two legs of the depicted animal in addition to the top of its back. The hump, long slender neck, short tail, and the very long slender legs compared to the rest of the body, provide the required pointers to identify the animal depiction as a dromedary camel. Analogously to other animal engravings depicted on the Western Face, this dromedary camel is not accompanied by anthropomorphic figures.

II.1.4.1.1.6 Equids (Figs. 53a: 10 and 16):

a) Fig. 53a.10:

Like the engraved dromedary, this animal depiction is shown in silhouette (Fig. 71). It is pecked and then heavily abraded and has a light patination (Fig. 72). As far as the style is concerned, it seems that there is a tendency to realism or naturalism since the engraver attempted to illustrate the characteristics that conform to an animal as it may appear in nature.

As a consequence, the represented animal offers a number of characteristics that lead to a positive identification. The large, long head, the mane on the neck, and the long legs with hooves all resemble those of the equids. The represented equid, however, does not have broad rounded ears or a long neck. Accordingly, identifying this equid as a zebra is excluded. Another reason is less zoological: the engraved equid appears to have a saddle on its back, but no bridle on its muzzle or the head. This could be taken as evidence that we are confronted with a domestic equid engraving and not a wild one.

Thus, the discussion goes forward with the question: does the depicted equid represent a domestic donkey or a horse? A more detailed examination shows that the ears of the represented equid are long and leaf-shaped. Such characteristics resemble a donkey rather than a horse. To identify this equid as a horse we have to discern slightly different, but important characteristics: short alert ears and a straighter profile. Since the head of the represented equid is not carried high, the back seems not short enough, and the legs, which carry large hoofs, are not fine, I believe we have enough evidence for identifying this equid engraving as a donkey and not a horse.

b) Fig. 53a.16:

More than one technique was used in executing this medium patinated animal depiction. The represented zoomorph, which appears in profile facing the East, has been done by abrading the rock surface though there is an attempt to outline the figure by using a pecking technique. It is not possible to distinguish which technique was first employed simply because both the pecked and abraded parts of the animal show the same medium patination. The components or the parts of the depicted animal are executed by using only curves and semi-curves that mainly consist of inverse "U".

The engraved animal has a linear body, fairly long head, a neck carried relatively high, a straight back, four long slender legs, and a long erect tail. The careful examination of the tracing, photographs, and slides shows that the engraving (Fig.53b.9) that lies directly above the represented animal is not a part of it, and consequently, has been identified as a sign (see below).

Although this highly schematic representation does not have any additional features that would make its identification easier, the features mentioned above seem to be enough to distinguish it as an equid.

Even though no additional useful identification characteristics are shown (*e.g.* the ears, mane, hoofs, type of tail) the large head which is carried low is sufficient to identify this equid as a donkey rather than a horse.

II.1.4.1.2 Indeterminate Animals:

Among the depicted zoomorphs of the Western Face some engravings are executed in a very schematic style and as a result do not provide the required details for identification. Four out of eighteen animal representations are difficult to identify with certainty. The engravings of this category are mainly concentrated on the left lower part of this face of the rock (Figs. 53a.8, 53a.12, 53a.14 and 53a.15). In what follows I give a description of the indeterminate animal representations.

II.1.4.1.2.1 Figure 53a.8:

This unfinished, dark patinated animal representation (quadruped) does not show the required outline (or even parts) for identification. When comparing it with the other cattle executed on the same face, some researchers may argue that it is possible to identify this incomplete animal engraving as a large bovid (for such comparisons see Hodder 1982a: 176). They may establish their identification based on the similarity of the hip and thigh, back legs, and belly of the represented bovids. Nonetheless, this is not enough evidence as the other cattle are represented with only one back leg and their hindquarter displays a different design (see Fig. 53a). I believe that the represented parts do not provide even the minimum characteristics for identification to Bovidae and, consequently, cannot help us to establish any taxonomic attribution.

II.1.4.1.2.2 Figure 53a.12:

This medium patinated animal engraving is executed by a pecking technique. The schematic style of the represented animal is exemplified by a linear body with a head facing the East. It is difficult, if not impossible, to discern the details of the represented head. The four legs consist of two inversed U's connected with the linear body. While the first fore-leg is directly attached to the head, the second back-leg is superimposed by the head of another animal engraving (Fig. 53a.13). Because of this superimposition it is not possible to tell whether the tail is depicted or not. It is also difficult to establish whether the curved line, which resembles an inverse "C" situated above the head and reaches the animal's back, represents a massive swept-back horn or a sign, as some parts of the animal seem to be re-engraved. This is evidenced by

two details. First, the medium patinated carved line above the head has a light patina at both ends. Second, an attempt was made to separate the second and the third leg of the animal as a sign with a character of inverted "U". This has been carefully done by using a small number of peck marks with light patination.

If this engraving represents an animal as I believe, and not one or more combined signs, the problem of identification, then, can be attributed to the fact that the executed lines and curves do not offer us the pointers that are required for a positive identification. Indeed, the schematic design of the represented animal does not show any other details. It is also risky to depend only on the curved line placed above the animal's head to identify it as an ibex (for example) especially when the tail, which should be short, is not shown in this case. In conclusion, it seems difficult to attribute specific characters of any given animal to the represented zoomorph.

II.1.4.1.2.3 Figure 53a.14:

The quality of this animal engraving is extremely crude. It is executed by a pecking technique and has medium patination. The represented animal, however, displays a slightly curved linear body, four legs (the second fore-leg in addition to the shoulder being superimposed by the front leg of another animal depiction: Fig. 53a.13), a long tail, and a relatively large head (no other additional details are shown). These characteristics, in themselves, are problematic in the sense that they are common amongst a considerable number of animal species such as hyaenids and felids.

Identifying the engraved animal in question as a domestic dog is a difficult task since it does not display an erect tail and long muzzle. Similarly, it could not be a jackal because it does not have a long narrow muzzle, nor a fox given that the ears are not depicted (the ears should be extremely large in this case).

Could this animal representation be identified, then, as a big cat given the shape and size of the head and the posture of the body? Although the represented animal shows a powerful build it cannot be successfully identified as a leopard for a number of reasons. First, the technique used or the mode of execution (where the body is fully pecked) does not enable us to discern with certainty whether or not the body has dark

spots. Second, rounded ears are not present. Third, the length of the represented tail does not correspond to that of a leopard (*i.e.* it should be half of the total length). Could we identify it as a cheetah? It would be plausible to describe the depicted animal as a very tall cat with a slender body but the face is not rounded enough though it has a short muzzle. Not only that but also the tail, which is slightly erect (?), is not long enough and seems to have a down instead of an upward curved tip. Again, because of the technique used we are not able to discern whether or not the represented animal has a spotted coat. Given the above reasons, it seems precarious to identify this zoomorphic figure as a cheetah. Likewise, the depicted animal is not shown with a mane on neck and on the visible part of the shoulder. The head is also not large enough for a lion and the tail is not long compared to the rest of the body. As a result, the general shape of the engraved zoomorph does not resemble that of a lion.

This zoomorphic figure displays a powerfully built body with four long legs and a blunt head and slightly curved (?) linear body. The absence of the rounded ears and the presence of a relatively long tail do not allow us to identify it as a spotted hyaena. Similarly, the lack of long pointed ears and mane on the nape of the neck and along the back prevents us from identifying what is presented here as a stripped hyena. The most important characteristic which prevents us from considering the hyaena as a positive identification in this case is that the back of the represented animal is not sloping enough. In other words, to adopt the hyaena as a positive identification we must not be in doubt that the shoulders or the rumps of the represented animal are higher than the hindquarters.

In the light of the extensive discussion elaborated above, I, therefore, argue that this animal depiction should be classified as an indeterminate carnivore rather than giving a more specific taxonomic attribution.

II.1.4.1.2.4 Figure 53a.15:

This medium patinated animal representation is strongly pecked on the rock surface and is superimposed on another animal depiction (Fig. 53a.13). What is depicted here is not more than two inversed U's connected with each other at their curved lines. One of them is larger and wider and placed up-side forming the upper parts of the depicted

animal. The small, narrow U, on the other hand, is setting down representing the two legs of the zoomorph, which is shown in profile.

All in all, the represented animal consists of a curved long slender thick neck, straight back, relatively long curved erect tail, and fairly long legs. The problem that we are confronted with, in this regard, is that we are not sure whether the top of the right end of the up-side U constitutes the head of the represented animal. It is true that one can easily discern very small pecked areas to the right and above the right end of the up-side U. These pecked small areas may give the impression that the head is already depicted. If one was to entertain this hypothesis, the first pecked area to the right, would represent the muzzle, while the second pecked area that consists of two very small-elongated parts will stand for the ears.

In both cases, however, a number of factors prevent even a tentative identification of the depicted animal. In the first case, where the head of the depicted animal is not represented, the shown parts of the zoomorph do not provide an unarguable identification. Although the represented animal has a long curved neck we are not able to identify it as a dromedary camel for, at least, three reasons. Firstly, there is no hump on the back. Secondly, the represented tail is not short but long and erect. Thirdly, the legs are not very long compared to the body.

In the case where the head of the represented animal is depicted (?), one may discern a long-legged-long-necked animal with slender body. The head seems to have a small mouth and large ears. But since the represented figure has a long instead of a very short tail, and does not carry any horns above the head it is not possible to identify it as a smaller gazelle (*i.e. Gazella rufifrons* or *G. dorcas*) nor even as a larger gazelle (*G. dama*). In conclusion, it is evident that the represented zoomorph should be classified only as an indeterminate animal.

II.1.4.2 The Signs:

On this face of the rock, there are signs in abundance (see Fig. 53b). They can be divided into two categories: darkly patinated signs and lightly patinated signs. The former mainly include those of the inverse "U" and "C" forms executed with the

pecking technique, and the great number of them are superimposed on the large size bovids and share the same dark patination (Figs. 53b: 11, 22, 23, 24, 26, 69, 70, 71, 73, 74, 75 and 76). On the other hand, most of the lightly patinated signs are pecked then abraded on the rock surface and have various forms (see below). In some cases, the lightly patinated signs with the inverse U and C superimpose cattle representations (Figs. 53b: 27, 28, 30, 33 and 72). Also, there are a number of light patinated signs with other characters superimposed on the same cattle (Figs. 53b: 29, 34, 77 and 78).

The dark patinated signs appear to be contemporaneous with the bovine representations while the light patinated ones are fairly recent. This could be evidenced by the fact that the former are darkly patinated, and their dark patination is as dark as the depicted cattle. In addition, most of the light patinated signs are executed by pecking then abrading the rock surface: the technique which generally characterises most, if not all, of the light patinated motifs at Foum Chor site. In conclusion, the dark patinated signs look contemporaneous with the depicted cattle since the latter are not lightly patinated or executed by the mixed technique. An inventory of the signs of Western Face follows:

Sign	No. of Occurrences	Fig. No.	Patina
1-	8	53b.3, 53b.7, 53b.13, 53b.16, 53b.37, 53b.44, 53b.68, 53b.90	Dark/Light
2-	15	53b.2, 53b.4, 53b.12, 53b.19, 53b.20, 53b.29, 53b.31, 53b.34, 53b.39, 53b.42, 53b.63, 53b.85, 53b.86, 53b.91, 53b.92	Dark/Light
3-	1	53b.5	
4-	20	53b.6, 53b.17, 53b.21, 53b.24, 53b.25, 53b.26, 53b.27, 53b.35, 53b.45, 53b.46, 53b.47, 53b.52, 53b.54, 53b.55, 53b.56, 53b.64, 53b.70, 53b.72, 53b.73, 53b.75	Dark/Light
5-	10	53b.8, 53b.11, 53b.22, 53b.23, 53b.30, 53b.40, 53b.50, 53b.61, 53b.74, 53b.88	Dark/Light

6- 	5	53b.1, 53b.9, 53b.28, 53b.36, 53b.71	Dark/Light
7- 	14	53b.10, 53b.32, 53b.33, 53b.38, 53b.41, 53b.43, 53b.48, 53b.49, 53b.51, 53b.60, 53b.65, 53b.69, 53b.76, 53b.89	Dark/Light
8- 	1	53b.53	Light
9- 	1	53b.62	Light
10- 	1	53b.14	Light
11- 	1	53b.15	Light
12- 	2	53b.18, 53b.79	Light
13- 	1	53b.57	Dark
14- 	1	53b.59	Dark
15- 	1	53b.67	Light
16-	1	53b.77	Light
17- 	1	53b.78	Light
18- 	1	53b.80	Dark
19- 	1	53b.81	Light
20- 	1	53b.82	Dark
21- 	1	53b.83	Light
22- 	1	53b.84	Light
23- 	1	53b.93	Light
24-	1	53b.94	Light
25-	1	53b.58	Light
16- Indeter.	2	53b.66, 53b.87	Dark
Total	94		

II.1.4.3 Arabic Inscriptions:

Among the engravings of the Western Face, there is only a single Arabic inscription. It consists of one word "شرف" (Sharaf): a masculine name refers to honour, nobility, or dignity. It is pecked then heavily abraded on the rock surface and superimposes a small size bovid (Fig.53a.7). It also lies directly above another sign (Fig. 53b.67) that superimposes the same bovid. Its patination is lighter than that of the superimposed bovid but similar to that of the sign (see Figs. 66, 68 and 70).

II.1.4.4 Other:

At a central point, approximately half a metre to the top of the engraved surface of the Western Face, there is a unique shape (Fig. 54). It seems to be natural rather than man-made and has the same dark patina as that of the rock surface. Either way, it resembles an imprint of the left hand but striking is that it shows four instead of five fingers (Figs. 55, 56 and 57).

II.2 Ahel-Ebdemmed Site:

This site is a part of the base rocks that constitute a mountain pass (*kheneg*) (see Figs. 78, 79, 82, 84, 85, 86, 8, and 88). It is located in 20° 35.709 of North Latitude and 13° 10.636 of West Longitude about 10 kilometres to the north-west of Azougi (*i.e.* 25 kilometres from Atar at the same direction). Kheneg Ahel-Ebdemmed, where the site lies, is surrounded by Oum Lemhar in the north, the Tayaret wadi in the north-east, and Te-n-Tarazzi in the south-west (see Maps 11 and 12). There is a trace of a palaeolake straddling the Kheneg from east to west. The rock art site is situated on the left side of the *kheneg*. Given that large boulders partly conceal the site, the engraved surface does not catch the human eye easily.

The engraved surface, which is almost vertical and consists of black sandstone, constitutes a small area within a huge bed of broken rock (Figs 89, 90, 91, 92, 93 and 94). It is 130 cm in height and 380 cm in breadth, while the dimensions of the site itself are 970 cm in length and hundreds of metres in breadth. One of the most

important aspects of the engraved area is the irregularity of its surface (see, for example, Figs. 96, 98, 99, 100, 101, 103, 105, 106, 107, 110, 111, 1 12, and 114). The engraved area itself does not suggest any kind of prior preparation. This can be confirmed by the fact that the other areas of the site have the same type of rock surface as the engraved area.

At this site there is a group of animal depictions and signs carefully pecked then heavily abraded or rubbed in the rock surface. It includes twenty- five animals executed in a stylised manner and nineteen abstract signs (Figs. 97.a and 97.b). The approximate dimensions of the represented animals are 7-13 cm in breadth and 10-13 cm in length. Despite the small dimensions of these zoomorphic figures they are, in most cases, of astonishing execution. All of them, on the other hand, are shown in silhouette; consequently, most of the details such as the eyes, mane, coat pattern, *etc.* are not shown. What is remarkable is that the cases of superimposition are completely absent among the engravings of this site. Similarly to the engravings of Foum Chor, there are no human figures represented among the depicted animals. The natural features and the shape of the rock of this site tend to separate the engravings into seven groups (see Figs. 95, 98, 99, 100, 105 and 106). Apart from the rock art, the site survey yielded no material culture.

II.2.1 The engravings of Ahel-Ebdemmed site:

According to their distribution on the rock face, the engravings of Ahel-Ebdemmed site can be divided into the following groups:

II.2.1.1 First Group (Figs. 95.1, 98, 101 and 107):

Five animals all of which are facing the East (Fig. 97a: 1, 2, 3, 4 and 5) and six signs (Fig. 97b: 1, 2, 3, 4, 5 and 6) constitute this group. All represented animals are depicted in profile but show four rather than two legs. Three out of the five engraved animals of this group are strongly patinated (Fig. 97a: 1, 2 and 3), one has a mixed or muddle (dark/medium) patination (Fig. 97a. 4), whereas the fifth (Fig. 97a. 5) has a light patination. Because of this dark patination and the high weathering of the engraved surface it was very difficult to discern and trace the first animal engraving

(Fig. 97a.1). The signs of this group all of which have medium patination consist of six inverte "U"'s. They are concentrated to the left of the first four animal engravings and lay directly below the fifth animal depiction.

II.2.1.2 Second Group (Figs. 95.2, 99, 108, 109 and 110):

There are five animal engravings (Figs.97a: 6, 7, 8, 9 and 10) three of which are partly eroded (Fig. 97a: 6, 9 and 10). However, all the represented animals of this group, which have medium patination, are shown facing the East except one that is depicted facing the West (Fig.97a.7). Noteworthy is that not all of these animal engravings shown in profile have the same number of legs. While the first two animals, which are facing two different directions, show only two legs (Figs. 97a: 6 and 7), the third animal (Fig. 97a.8) has four legs. It is difficult to determine whether the other two animal depictions (Figs. 97a: 9 and 10) are represented with two or four legs since their lower parts are highly eroded. In addition to the represented animals already mentioned above, there are three pecked, but highly eroded signs all of which have the same medium patination. The first sign (Fig. 97b.7) lies directly above one of the represented animals (Fig. 97a.6). It resembles more or less an oval-like shape with radiated lines on top. The second and the third signs (Figs.97b: 8 and 9) have the character of an irregular, inverse "U". They lay to the left-hand side of the other three animals of this group (Figs. 97a: 8, 9, and 10).

II.2.1.3 Third Group (Figs. 95.3, 105, 106, 107, 110 and 111):

This group includes four animal representations (Figs. 97a: 11, 12, 13 and 14) and one sign (Fig. 97b.10). As to the four depicted animals, they are executed by the same technique of those of the first two groups. Except for one, which has mixed (medium/light) patination (Fig. 97a. 13), all the depicted zoomorphs share the same medium patination. The represented animals of this group seem to be vertically arranged in a line or a row one following the other. They also face different directions: while the second and the fourth animal engravings (Figs. 97a: 12 and 14) face the East, the third one (Fig. 97a. 13) is shown facing the West. Because of the strong weathering of the first animal depiction, which is badly eroded (Fig. 97a.11), it is difficult to recognise which direction it faces. Striking is that one of the depicted

animals appears to have a saddle on its back (Fig. 97a13). The only sign in this group resembles an inversed "U" and has a medium patination (Fig. 97b.10).

II.2.1.4 Fourth Group (Figs. 95.4, 106, 111, 112 and 113):

Three animal representations (Figs. 97a: 15, 16 and 17) and three engraved signs (Figs. 97b: 11, 12 and 13) are included in this group. These engravings are unpatinated except for the second sign (Fig. 79a. 13) that seems to have a medium patination. The three fine and elegantly engraved animals are shown in profile but have four legs instead of two. They face the same direction: the West (Figs. 97a: 15, 16, and 17). They are pecked then heavily abraded with much care into the rock surface. Though they are executed in vertical line they give the impression that they are standing by each other in a horizontal row. They seem to be done by the same hand and contemporaneous to each other. What is also important in this group is that the three signs, which have different characters, seem to be carefully placed on the engraved surface of this group. The first sign, which consists of two Latin letters: "I" and "T" (Fig. 97b.11), is situated directly above the first animal depiction. The second sign, which resembles a circle (Fig 97b.13), lies to the right hand side of the second animal engraving. The third sign, which resembles a capital "I" (Fig. 97b.12), lies to the left next to the third engraved animal.

II.2.1.5 Fifth Group (Figs. 95.5 114, 118 and 119):

Similar to the fourth one, this group shows also three engraved animals and three signs. Three different animals are shown in profile all of which are facing the East (Figs. 97a: 18, 19, and 20). They are done by the same technique (*i.e.* they are pecked then abraded on the rock surface) but do not have the same degree of patination. The first animal engraving (Fig. 97a.18) has a light patination; the second one (Fig. 97a.19) has a muddle (dark/medium) patination; and third (Fig. 97a.20) has a mixed (medium/light) patination. Compared to the other two animal depictions, the first one (Fig.97a.18) is heavily abraded and done with much care. This leads me to suggest that the three represented animals are not executed by the same artist. To the right of the represented animals, there are three signs connected with each other, all of which consist of an inverted "U" and have light patination (Figs. 97b: 14, 15 and 16).

Imprecise investigation may lead one to classify them as an indeterminate animal and not as a 'cluster' of signs.

II.2.1.6 Sixth Group (Figs. 95.6, 115, 116 and 117):

Three animals (Figs. 97a: 21, 22 and 23) have been engraved along with three signs (97b: 17, 18 and 19) all of which have medium patination. The three depicted animals are shown in profile facing the West. Two of them show the four legs while the third one has only two. Like the engraved animals of the other groups, they are executed by the same technique. As for the three signs of this group, two of them consist of inverted "U" (Figs. 97b: 17 and 18) and lay directly above the first animal engraving mentioned above (Fig. 97a.21). The third sign (Fig. 97b.19) resembles a straight or horizontal short line and lies to the left-hand side of the third animal of this group.

II.2.1.7 Seventh Group (Figs. 95.7, 120, 121 and 122):

In this group there are two small size animal engravings facing each other but one of them is placed at a higher point than the other (Figs 97a: 24 and 25). Similar to most depicted animals of this site, these two equids, which have medium patination, appear in profile but show four legs. As for the technique used, they are finely pecked then rubbed or abraded although they initially give the impression of having been executed with only abrading technique. This can be explained by their high degree of weathering and their small size. To give the impression that the two depicted animals are facing each other, it seems that the artist followed two ways. He not only depicted them in two opposite directions, but also used the natural features of the rock surface (*i.e.* the shape of the rock and the cracks) to separate one from the other.

From this description, one can compile the following inventory that gives an overview for the depicted motifs of this site:

Group	No. of animals	No. of signs	Total no. of motifs
First Group	5	6	11
Second Group	5	3	8
Third Group	4	1	5
Fourth Group	3	3	6
Fifth Group	3	3	6
Sixth Group	3	3	6
Seventh Group	2	-	2
Total	25	19	48

In the remainder of this chapter, I classify the depicted animals of this site in two categories: 'identifiable' and 'Indeterminate' animals. This classification will be based on the minimum numbers of the pointers that are required for suggesting a positive identification of these zoomorphic representations of the seven groups.

II.2.2 Identifiable Animals:

According to the represented features, twenty-four out of twenty-five animal engravings of site no. 2 can be identified as follows:

II.2.2.1 Equids (Figs. 97a: 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24 and 25)

Regardless of the small number of the partly eroded animal depictions (Figs, 97a: 6, 9, 10 and 21), most of the zoomorphic engravings mentioned here share a number of morphological features. In addition to the elegant appearance of these engraved animals, all of them also have a straight profile, compact body, relatively large elongate head, muscular neck, straight fine legs, and long tail. These features characterise the equids rather than any other animal (for these comparisons, see Chapter 3, this thesis). They are neither accompanied by chariots nor mounted by riders.

The discussion on the identification of these equids, then, goes further since the family of African Equids includes more than one species. A careful investigation of the engraved equids of this site shows that none of them is depicted with broad rounded ears, the feature which constitutes one of the most important pointers to identify an equid figure as a zebra (*Equus zebra*). Consequently, we must exclude the zebra in our quest to identify these engraved equids. Thus, the question of identification will be limited to wild asses and donkeys, on the one hand, and the domestic horses, on the other.

II.2.2.1.1 Wild Asses and Donkeys (Figs. 97a: 12 and 18):

Two out of twenty-two equid representations mentioned above in this section are characterised by very few, but important, diagnostic features for the donkey. Compared to other depicted equids, the first engraving under investigation here (Fig. 97a.12) shows an elongated head with long pointed ear. The second equid (Figs. 97a.18, 118 and 119) is depicted with an elongated head and long leaf-shaped ears. Its legs are not as fine as those of other equids.

Taking into account that we are confronted with the silhouettes of engraved equids, I believe that the minimum pointers which are present here are sufficient to identify the two mentioned equids as wild asses or donkeys and not horses.

II.2.2.1.2 Horses (Figs. 97a: 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, and 25):

All these represented equids, even the most eroded ones (Figs. 97a: 9, 10 and 21), have an elegant appearance and constitute a vigorous group in themselves though most of them are depicted in static stance (*i.e.* they are not galloping apart from one: Fig. 97a.9). These 'equidian silhouettes' offer pointers that lead us to distinguish them from wild asses and donkeys. None of these engravings shows long pointed ears. There is also no indication that the neck carries an erect mane. Instead of these important features that characterise wild asses and donkeys, the represented equids show particularly horse-like features.

Morphologically, the main body consists of a compact forequarter and a square well-set hindquarter (Figs. 97a: 2. 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 21, 22, 24 and 25). They also display a straight profile (see, for example, Figs 97a: 13, 14, 20 and 23). The head is short, the neck is carried high, the back is straight, and the tail is set high in some cases (Figs. 97a: 9, 13, 14, 24 and 25). In addition, the slender legs of these equids are fine and straight, but no hoofs are represented. Therefore, these morphological features provide us with the pointers that are required to identify those twenty depicted equids as horses.

II.2.2.1.2.1 Discussion of classification of the equidian representations:

From the description presented above, I attempt here to classify the engravings of equids according to different criteria that include: technique, patination, the form of the represented equids, the care taken in execution, and the number of represented legs.

II.2.2.1.2.1.1 Patination:

Whether or not the degree of patination is controlled by the local conditions of the engraved rock, variation in the patina could be used, for the purpose of this description, to classify the equids represented at Ahel-Ebdemmed site. According to their patina the twenty-two equids of this site can be divided into the following classes:

II.2.2.1.2.1.1.1 Darkly patinated equids:

This group includes two equids: Figs. 97a: 2 and 3 (First group).

II.2.2.1.2.1.1.2 Equids with muddle or mixed patination (dark/medium):

This group contains only one equid: Fig. 97a.4 (First group).

II.2.2.1.2.1.1.3 Medium patinated equids:

This group comprises twelve equids: Figs. 97a: 6, 7, 8, 9 and 10 (Second group); Figs. 97a: 12 and 14 (Third group); Figs. 97a: 21, 22 and 23 (Sixth group); and Figs. 97a: 24 and 25 (Seventh group).

II.2.2.1.2.1.1.4 Equids with muddle or mixed patination (medium/light):

This group covers two equids: Fig. 97a.13 (Third group); and Fig. 97a.20 (Fifth group).

II.2.2.1.3.1.1.5 Lightly patinated equids:

This group contains two equids: Fig. 97a.5 (First group); and Fig. 97a.18 (Fifth group).

II.2.2.1.3.1.1.6 Unpatinated equids:

This group consists of three equids: Figs. 97a: 15, 16 and 17 (Fourth group).

II.2.2.1.2.1.2 Technique:

As mentioned before, the engraved equids of this site are pecked then abraded on the rock surface. The artists did not employ any other technique which would have enabled them to add other details. As a result of using this technique, what appears is just a silhouette of the animal. Consequently, the technique, by its broad meaning has no relevance for the classification of the depicted equids. We can only compare the represented equids one with another by stating that an equid is more strongly abraded than the other is. But, such a comparison will be distorted since most of these engravings are strongly affected by weathering conditions.

II.2.2.1.2.1.3 Form:

According to the form, the depicted equids (excluding asses and donkeys) can be divided into four groups:

1- Equids with narrow long neck, and small head (Figs. 97a: 2, 3, 4, 5, 6, 7, 8, 15, 16, 17, 21, and 23).
2- Equids with short neck, and large elongate head (Figs. 97a: 22, 24, and 25).
3- Equids that have an almost linear body (Figs. 97a: 13, 14, and 20).
4- Galloping equids (Figs. 97a: 9 and 10).

II.2.2.1.2.1.4 Care in execution:

Whether or not the represented equids are contemporaneous to each other care taken in execution could be useful in classifying them. The problem we are confronted with, however, lies in the fact that some of the engraved equids are highly weathered while others are very darkly patinated. During the fieldwork, it was extremely difficult not only to trace but also to discern, for instance, the first three equids of the first group (Figs. 97a: 2, 3 and 4) because of their high patination and the two equids of the seventh group (Figs. 97a: 24 and 25) which are strongly weathered. The depicted equids of the fourth group show that the engraver paid much care to execute his artistic work. They are carefully engraved and well distributed in the rock surface comparing with the equids of the second group or with those of the third group. However, we cannot reach the same conclusion if we compare the same equids (*i.e.* those of the fourth group) with those of the first one. The careful comparison shows that the artist also paid much care to execute his equids on the rock surface. It is very likely that they are done with much more care than that of the fourth one, but sometimes, weathering conditions prevent us from visualising such important details.

II.2.2.1.2.1.5 Number of legs:

If we classify the depicted equids according to the number of legs represented we find the following:

1- Equids depicted with four legs (Figs. 97a: 2, 3, 4, 5, 8, 15, 16, 17, 18, 20, 23, 24, and 25).
2- Equids depicted with two legs (Figs. 97a: 6, 7, 9, 13, 14, and 21).
3- Equids shown with three legs (Figs. 97a: 12 and 22).

4- Equids with 'eroded' legs (Fig. 97a.10). (Possibly has two legs compared with Fig. 97a.9).

II.2.2.2 Canids (Figs 97a: 1 and 19):

In addition to the twenty-two engraved equids there are also another two animal depictions both of which share a number of distinctive features. They show relatively long legs, long muzzle, long tail, and pointed erect ears. In the light of these important features, it is possible to identify the two engraved animals as canids.

The first canid depiction (Fig. 97a.1), which is darkly patinated, has slender body, long bushy tail, short neck, narrow muzzle, and long pointed ears. Except one, these features match the wild dog. But, since the canid depiction does not have large round ears and its legs are not long enough we cannot identify it as a wild dog. Similarly, we would need to discern 'prick ears', occasionally with drooping tips, in order to identify this figure as a pariah dog. Furthermore, the depicted canid does not resemble a fox since the ears are not extremely large. The silhouette of this canid does not show long hair covering specific parts of the body (*i.e.* the neck, chest, posterior parts of fore- and hind-legs, and the lower part of the tail). Consequently, identifying this canid engraving as a Berber dog is excluded. The final result of this discussion, then, is that the presented features of the engraved canid allow us to identify it as a possible jackal (*Canis cf. adustus/aureus*).

The second canid representation (Fig. 97a.19) has muddle or mixed (dark/medium) patination. It is characterised by a large size, slender and compact body, long legs, long erect tail, long muzzle, and pointed and erect ears. The above features, however, prevent us neither from identifying the depicted canid as a wild dog since it does not have large rounded ears nor as a fox which is always characterised by extremely large ears. Identifying the engraved canid as a Pariah dog is also uncertain since it does not show prick ears with drooping tips. It is true that most of the characters mentioned above resemble the African jackal but the tail of the depicted canid is not carried low. Instead, it takes a straight form; and this is one of the most important features that characterise the Berber dog (*Canis familiaris*) when it is running. Therefore, this depiction can be tentatively identified as a domestic dog.

II.2.3 Indeterminate Animals:

Among the twenty-five animals representations traced on the rock of this site there is only one animal in the third group which is difficult to identify.

II.2.3.1 Figure 97a.11:

This medium patinated, incomplete or eroded figure has no clear outline, as we cannot discern with certainty the main body parts. In other words, there are important missing pointers that prevent us from making a positive identification. If we compared what appears from the represented animal with the other depicted animals in the same group and other groups we will not be able to establish even an approximate identification. One of the most important problems in this regard lies in the ambiguity of the direction in which the animal is facing. One can easily interpret a head as a tail and *vice versa*. For all these reasons I strongly believe that any attempt at identification will be mistaken.

Chapter 5
Northern Atar Engraving and past Saharan Environments

I. Introduction:

We all have our image of the Sahara. For some it is a harsh place where its wild nature and sparse ecosystem coexist in a primordial unity. For others, it is a place to echo the sound of silence and spirits.

Such images give the impression that the Saharan region, with its harsh climate, was one of the most unpopulated and inhospitable places on earth. But, in addition to the research of other disciplines, the successive discoveries of rock art corpora in different parts of the desert have come to shed light on our understanding of past environments in what is now the Sahara.

Among the rock engravings recorded at the Foum Chor and Ahel Ebdemmed sites in the Mauritanian Adrar, there are a number of representations that depict fauna. As described in Chapter 4, one can find zoomorphic figures of canids, hyaenids carnivores, antelope, cattle, equids, and camelids. To the early rock art researchers of the Sahara such motifs were important indicators of past Saharan environments. What was the basis for this approach and what can it still tell us today?

I will discuss in this chapter four integrated issues concerning the potential relation between rock art and past environments in the Sahara. The first issue is related to the validity of rock art in reconstructing past environments. The second issue is based on the discussion of how rock art has been used in early Saharan archaeology to document environmental changes. The third issue represents a critique of this use of rock art by showing how this sort of interpretation is at the mercy of changing archaeological data, and can lead to circularities in argument; and how environmental reconstruction in the Sahara during the Holocene has become more sophisticated. The fourth and last issue is devoted to considering the utility of my own data for the environmental paradigm.

II. The validity of rock art as an archaeological tool for reconstructing past Saharan environments:

Does rock art help us archaeologically to investigate environmental changes that occurred in a particular area during a particular period of time? Are the depictions of rock art necessarily associated with such environmental changes?

For the earliest western researchers of the Sahara, the rock images of the desert supplied the initial indication that the Sahara once housed lacustrine environments (Lhote 1959, 1961; Ford-Johnston 1959; McBurney 1960; Lajoux 1962). Subsequently, the mere distribution of animal motifs by species provded a certain spatial palaeozoology for the continent (*cf.* Mauny 1957).

For some prehistorians, the study of rock paintings and engravings is useless or even dangerous for archaeology. They insist that using rock art images as evidence for environmental changes should have a "warning against the temptation to do the easier task" (Monod 1963: 181). This may explain why archaezoologists, for instance, often make very little use of rock art representations (mainly animal depictions of the naturalistic style) to study the history of fauna though they provide important elements for reconstructing such a history. The reason for this is that "they think that rock art pictures are not datable and consequently that one does not know the page of faunal history to which these documents relate" (Muzzolini 2000: 88). However, rock paintings and engravings, as Monod (1963: 181) claims, still play a very important role and they "remain nevertheless great as long as one never loses sight of the many handicaps that affect their study".

As to the Saharan rock art and its value in studying the past environment, Bailloud (1997: 21) sees that these paintings and engravings compared to other archaeological remains constitute "a second and extremely precious source of information about people" and, consequently, their environment. Clutton-Brock (1993: 70) considers rock art as the "best evidence for the kinds of livestock owned by pastoralists throughout Africa".

It is worth noting that animal representations are of great importance in light of the fact that other archaeological evidence does not reveal much about the fauna that possibly lived in this wide zone in the past. This is evident in the large gap which one may easily perceive in the archaeological record of osteological remains discovered there so far. In this instance one may ask: how many giraffe bones, for example, have been discovered in the Sahara, and how many horse remains have been found there? The answer is, few in the first case and none in the second (MacDonald & MacDonald 2000). The same question can be asked for rare objects such as weapons (bows and arrows, shields, javelins, *etc.*), clothing and customs (hair-dress, dance, rites, *etc.*). Moreover, we may discuss the various problems of chariots of the Sahara (*e.g.* their origin and distribution) yet we frequently ignore the total lack of any chariot remains discovered there. In this instance, the importance of rock art images when contrasted with an absence of physical evidence can influence the interpretation of the phenomenon in question (Grébénart 1988). However, there are also a number of substantial problems raised by using represented fauna in studying environmental changes and changing climates that occurred in the Sahara during the Holocene. Among these problems I can refer to the following:

First problem:

Most of the Saharan rock art sites, and consequently animal representations, are not associated with stratified archaeological assemblages nor have many been directly dated. Accordingly, such images or pictures lack the precise dates that allow us to reconstruct environmental changes with certainty. Compared to other finds, rock art images, as Blench (1993a: 71) states, "constitute a more informative source of data but they are notoriously hard to date and give a misleadingly patchy coverage of types". Thus, most histories of environmental change obtained by the study of represented fauna of Saharan rock art lack chronological precision and, therefore, need to be supported by other archaeological evidence.

This explains why rock art images, for some scholars, are not useful for providing accurate or precise archaeological information about palaeoenvironmental questions. The Large Wild Fauna, for example, did not completely disappear during what Saharan rock art research call "the Bovidian Phase". As we will see in this chapter,

elephants existed in the Sahara until a very recent time. Moreover, a considerable number of the engravings of domesticated animals such as large cattle, sheep and goats are represented amongst rock art of the supposedly oldest phase (the *Bubaline*); they are, in many cases, depicted on the same rock and also have the same dark patina that the engravings of Large Wild Fauna have (see, for instance, Jelínek 1989: 518). In his description of the Bovidian Pastoral Phase of the Saharan rock art Willcox (1984: 35), for example, relates: "[This phase is] characterised by many polychrome paintings of herds of cattle, obviously domesticated, and often shown with their herders and milkers. The wild fauna is much the same as before [*Bubaline* Phase] and there are some hunting scenes, but rather rarely". Therefore, it seems difficult, in some cases, to rely upon zoomorphic representations to establish a sequence for environmental change that occurred in the Sahara during the Holocene or take a particular animal or group of animal depictions as clear evidence for such climatic shifts. One is led, therefore, to conclude that rock art can be a tentative indicator of but not conclusive evidence for, past environmental changes that occurred in the Sahara.

Second problem:

The artists "did not depict animals in proportion to their material significance in daily life, as understood by archaeological examination of faunal remains" (Davis 1990: 292). Sometimes the painters or the engravers concentrated on a few species ignoring or omitting, for one reason or another, other animal species that once lived in their territory. For example, where are the numerous freshwater fish of the palaeolakes in these depictions? Davis (*ibid.* 292) presents this problem as follows: "[...] the statistics suggested that rock art was not simply or straightforwardly but rather *selectively* documentary- or perhaps not documentary at all [...] Artists had some 'motivation' for selectively representing aspects of their environment, 'aesthetically charged' for some specifiable reasons". In addition to what Davis suggests some scholars believe that rock art is an untrustworthy source for investigating and reconstructing environmental changes and other related topics. This is simply because they look at rock engravings and paintings as "drawings from memory" and "successive copies" (Monod 1963: 181).

Third problem:

According to the interpretation based on ethnographic analogy some writers conclude, "a 'picture' need not depict real things in the real world of the artist, straightforwardly recorded by him" (Davis 1990: 294). If one accepts this conclusion, then, it will be a kind of absurdity to consider the represented fauna a part of the physical surrounding that implies that environmental changes occurred in the area. As a result, it seems difficult, in such a case, to take such images as evidence for the material life (*e.g.* the 'real' environment) rather than the ideological sphere (*e.g.* rites, belief system, and supernatural). In other words, the depicted animals will be problematically interpreted according to their content (the meaning) and not the form (see Davis 1990: 294).

In my opinion, we may eliminate, in some cases, strictly symbolic interpretation since not all artistic works reflect ideological concepts. If we did not accept some "literal interpretation" (see, for instance, Bahn 1998), then, it will be difficult to obtain any information about the material life of the past from art.

I also argue that since there is no clear evidence for the hypothesis that each picture or image is involved in what most of rock art researchers call a "sign-system", it may be possible to look at most of the zoomorphic figures as "artistic fossils" of the animal species that already lived in a particular area within a particular period and, consequently, take their sequence (according to the style, technique, represented themes, patina and superimposition) as evidence for the successive environmental changes that occurred in the past.

I strongly believe that whether or not the represented animals signpost an ideological meaning they reflect, to some extent, a part of the physical environment of their authors. At this point, let us suggest that the image (x) is interpreted, for example, as a 'totem'. This reason, however, does not prevent us from seeing this animal as part of a fauna that actually lived in the area at that particular period of time. This view can of course be rejected if the particular animal species that identifies a particular totemic group is not present in their own habitat (for some examples see Whitaker 1984). However, even if an animal may not be native to an artists' zone during their lifetime,

it is unlikely that it would have been unknown to their people within a scale of decades. Thus at an archaeological time scale, such presence may be 'good enough'. If the eland in South African or San rock paintings, for instance, could be seen or explained as the zoomorphic figure that represents the "union of man and animal in trance dance" (Davis 1990: 293), this implies that the animal, the eland, is connected not only with the San social and ideological life but also with their natural world.

Fourth problem:

Errors made by the researchers during recording process (see Chapter 2, this thesis) and the identification of represented fauna (see Chapter 3, this thesis) may lead to distorted or misleading conclusions about environmental changes that occurred in the Sahara.

III. Rock art and environmental change in later Saharan Archaeology:

Early attempts at archaeologically-oriented environmental reconstruction in the Sahara derived from the classification of rock art images discovered there. Among a considerable number of classifications, Monod (1963) mentions the following:

K. W. Butzer (1958):

1- Neolithic hunters (*ca.* 4500 to 3600 BC):

   Big game: hippopotamus, crocodile, rhinoceros, elephant, ancient buffalo (*Bubalus*), giraffe, ostrich, and antelopes

2- Shepherds and Neolithic nomad hunters (from *ca.* 4000 BC):

   Herds of bovids and big game

   Retreat of hippopotamus, rhinoceros, elephant (around 2000 BC) in the Central Sahara

3- Warriors and war chariots (after 1500 BC in the east, towards 1200 BC in the centre):

   Horse, giraffe, ostrich, antelopes

4- Nomadic camel riders (from our era):

   Camel, ostrich, Barbary sheep

Y. Tschudi (1955):

1- Tropical fauna Epoch

2- Pastoral Epoch (with agriculture)

3- Garamantes Epoch

4- Cameline Epoch

R. Mauny (1956):

1- Naturalistic group, with Large Ethiopian Fauna (5000 BC to 2000 BC)

2- Neolithic group, with bovidian shepherds (2500 BC to 1000 BC)

3- Horse group (1200 BC to our era)

4- Libyco-Berber group (200 BC to 300 AD)

5- Arab-Berber and modern group (after 700 AD)

P. Huard (1957):

A. Neolithic hunters (after *ca.* 4000 BC):

Engravings of hunters, big Ethiopian fauna

B. Pastoral phase, bovidian stage which includes:

1- Archaic: near A, but with domestic indigenous cattle, *Bos ibericus*

2- Early: hunter-shepherds (Oudingueur)

3- Middle: (Bardai; Oudingueur; Areun); *ca.* 2000 BC

C. Horse-camel group

4- Late (phase of the pastoral series); Iron Age-beginning of the Christian era

5- Modern phase

G. Bailloud (1958):

1- Prebovidian period (Early Neolithic?)

2- Bovidian period

   a. Early (Early Neolithic?)
   b. Middle (Middle Neolithic)
   c. Late (Late Neolithic)
   d. Final (coming of iron)

3- Camel period (Iron Age)

   a. Early
   b. Late
   c. Modern

From these early classifications represented above, one can conclude that most, if not all, these divisions follow:

a) An older (*Bubaline*) phase [the 'hunters' art': early Neolithic], which is characterised by the 'naturalistic' representations of Large Wild 'Ethiopian' fauna (*Bubalus antiquus* or the extinct giant wild buffalo, giraffe, elephant, rhinoceros, hippopotamus ... *etc*).
b) A (*Bovidian*) phase [the 'pastoralists' art': Neolithic], which includes primarily representations of domestic cattle.
c) A (*Caballine*) phase [the 'horsemen's art': historic period], which includes representations of horses and chariots.
d) A (*Camelline*) phase [the 'camel riders' art': historic period], which includes representations of camels.

These sequences reflect the fact that paintings and engravings were used by the early prehistorians as a tool for reconstructing the past environment and ecological changes that occurred in the Saharan zone during the Holocene (though usually not as independent evidence). Our question today must be: Do these classifications or depictions really follow the environmental changes that occurred in the Saharan zone during the Holocene? To discuss this crucial issue let us pursue first what happened in

these studies and how this sort of archaeological material was used to pursue this goal.

In this regard, I start with Monod's contribution since he is considered one of the most important pioneers of rock art studies in the western part of the Sahara where the area under investigation is situated. The cornerstone of Monod's thought is that in these engravings and paintings "one surely finds an element of the local surrounding [...] When the rock artist draws giraffes, cattle or chariots, he has, if not before his eyes at least nearby, his big game, his herd, or his cart" (Charles-Picard in Monod 1963: 181).

For Monod (*ibid.* 181-2), rock art, despite its chronological problems and the expected errors of explanation, provides us with "little if anything ordinary archaeology could not reveal to us". In addition, rock paintings and engravings, even if not prehistoric, are still of interest. He considers them as "rock archives" since they provide valuable information about the ancient ethnology of the Sahara and the cultural influences that have penetrated the desert during the centuries (Monod 1937: 157). Furthermore, he has suggested, "the chronology of Saharan rock art may be determined by the evolution of the fauna represented in the pictures" (Alimen 1957: 361). In this respect, he identifies his first group (the Ancient) as a "precameline, bovine or elephant-bovine" and the second group (the Middle) as a "cameline" (Monod 1938: 93). According to his proposed classification of rock art images (see also Chapter 1, this thesis), Monod concludes the economic and environmental changes that occurred in the western Sahara: a bovidian period (in archaeological terms corresponding to the agricultural age) is succeeded by an equine-cameline period. The latter, according to him, coincides with the disappearance of lakes of the last humid period and the gradual deterioration of living conditions (*ibid.* 127-8).

Mauny (1954: 9-14) described the past environment in West Africa according to the rock art discovered in the area. The Large Ethiopian Fauna (mainly elephants, giraffes, rhinoceros, hippopotamus and crocodiles) were dispersed in the Sahara and up to the Mediterranean between 5000 and 2000 BC, and at the same time, the first cattle herders appeared. Between 2500 and 1000 BC the Large Ethiopian Fauna retreated because of the climate (they became less often represented) and were

replaced by cattle herds. By 1200 BC horse and chariot made their first appearance after the Saharan climate became harsh. By the beginning of Libyco-Berber period (200 BC to 700 AD) horses became more numerous, but camels started to spread into the Sahara replacing the horse, which gradually became confined to the Maghreb and the Sudan. The rock art representations of the Arabo-Berber and modern group (700 AD to our era) reflect harsher environmental conditions in the Sahara (the schematic depictions of camels, hunting oryx, and ostrich). But, from where did Mauny derive such dates? In this regard Mauny himself wrote: "we can give an approximate date for a site that displays the characteristics of a certain group, based on the lithics of that site" (Mauny 1954: 25) (Translated from French). However, it is dangerous to depend on the dates obtained from such a method of dating since "the art may not have been the work of the people who left stone tools lying around- but where the same kind of artefacts are consistently found associated with the phase of art and is the only kind present, it is virtually certain that the tools and the art were the work of the same hands" (Willcox 1984: 32). For that matter the dating of assemblages ... particularly their typological dating ... may change.

Mauny (1957) went further in using rock art subjects to study specific aspects of the environmental conditions by choosing four types of megafauna (the hippopotamus, the rhinoceros, the elephant, and the giraffe) to illustrate the retreat of the Large Ethiopian Fauna from the Palaeolithic to modern times in Northwest Africa. The distribution of these species according to his study is based upon the maps that show the sites of rock art where the four species are represented (for an example of Mauny's original figures see Fig. h: 5 and 6); the sites where their osteological remains have been discovered; the sites where a historical mention was made of the presence of animals outside their contemporary habitat; and the contemporary habitat of the species in question. From these distributional maps (Maps 13, 14, 15 and 16), Mauny reaches the following conclusions:

In the Palaeolithic age the four species under investigation are represented in almost all of North West Africa. The remains are particularly abundant in the Maghreb while in Sudan and Erg Tihodaine one can find the hippopotamus, rhinoceros and elephant. In the Neolithic age the habitat is divided into small islands of relic populations of which the most important is the Maghreb and the Saharan massifs. The limit of the

zone of the Large Ethiopian Fauna is clearly more northern and extends to 2° N with projections that include the massifs situated more to the North and the rock art representations provide more fine indications in this respect. Among the four species in consideration, only the elephant remained in the Maghreb during Classical antiquity; in the same period one can only identify two uncertain mentions of a hippopotamus towards the South of Morocco and of a giraffe in the Fezzan. Historical records underline the alarming retreat which is also registered by influx of European hunters that made hecatombs of game. The situation only stabilised some years ago with the creation of African wildlife preserves.

Alimen (1957) pays attention to the great value of using rock art as important evidence for changing environment in the Sahara during the Quaternary:

> The ecological data afforded by the pictures are [...] very valuable. Such and such a fauna suggests semi-desert conditions while another set of animals show that where and when they flourished there were savannas. Other faunal assemblages, again, prove that there existed, in the heart of the Great Desert of today, pastures (many representations of cattle) and marshes (crocodiles and hippopotamus). We have here, possibilities of a linkage with the climatic chronology.
>
> (Alimen 1957: 355-6)

Alimen depended on the represented zoomorphs found at a great number of current Saharan sites to prove that some animal species existed in the area before they became extinct:

> Certain rock-engravings in the Saharan Atlas of the Maghreb depict a species of buffalo now extinct (*Bubalus antiquus*) and also elephants whose geographical range today is confined to regions much farther south. Some of the engravings in the Hoggar show us that, in ancient times, hippopotamus and rhinoceros lived in the central Sahara.
>
> (Alimen 1957: 355)

Alimen goes so far as to attempt to reconstruct the palaeoenvironment of the Saharan zone regarding the naturalistic art of the hunters found in the south of Maghreb, Tassili and Fezzan regions, South Oranias, Tebesti and the Marhouma station (the Western Sahara). To big game representations, which are engraved in naturalistic style by using large incisions, she associates the following type of environment:

> [...] an important vegetation and large areas of water, at least a high humidity. Flamingos, shoe-bill, marsh birds and fish-eating birds evoke (as do wart-hogs, buffalo, and rhinoceros) vast muddy areas probably established on the present location of fossil sebkhas. Outside the sebkhas, on the ancient terraces of the [wadis] and in the ravines which cut the flanks of the [mountains], groves of trees grew, probably more or less related to talhas [*Acacia raddiana*], present day tamarisk and palm.
>
> (Alimen in Monod 1963: 183)

Besides using the rock art as evidence for environmental changes, Alimen (*ibid.* 355) also mentions the importance of comparison of the represented animals with palaeontological evidence. She also refers to the possibility of using the geological evidence, in some cases, to maintain our image of the reconstructed ancient environment obtained by rock art images. Here, she gives the following example:

> [...] if a site is by the bank of a *wadi*, still existing or fossil, the position of the station with regard to the various fluviatile terraces may serve to place it in Quaternary chronology, and consequently correlate the site, indirectly, with such and such prehistoric culture.
>
> (Alimen 1957: 357)

Furthermore, Alimen notes that the distribution of rock art in the Maghreb and the Sahara, the area which seems today quite arid and unpopulated, is "linked with the position of the water-holes, springs, and wells which were established during the last wet phase of the Neolithic" (*ibid.* 359).

The concentration of paintings in a zone running from the Ennedi, through the Tibesti to the Tassili n'Ajjer led some early prehistorians and rock art researchers to speak about what they called the "great cross-wise Saharan route" where a great number of water-holes still exist at present (*ibid.* 368).

Among the most recent studies that attempt to use rock art representations as a source of information on the ecological evolution and environmental changes in the Neolithic Sahara is that of Vernet (1993). He named the most ancient phase of the Mauritanian rock engravings as "Large Tropical Fauna". This implies that this western part of Sahara, where the rock engravings of these species are concentrated, was characterised by a lush tropical environment at the beginning of the Neolithic era.

Classifying the domestic animal (bovid) representations of the third-first millennia BC as a separate/successive group in his "ecological evolution" signifying a sequence of environmental change. This is simply because the domestic bovids cannot be herded in a tropical, but only in a savanna environment. At this point, he claims that these representations (which are poorly depicted bovids, chariots, horses, hunting antelope, gazelle, and ostrich) reflect the penultimate degradation of environment in the area. He concludes that the rock art of Mauritania "dramatically shows the influence of the Saharan climate on the population by reduction of the themes and the degradation of technique and aesthetic quality" (Vernet 1993: 126) (Translated from French).

From the foregoing we can conclude that researchers of Saharan prehistory have tried to employ rock art as a tool of reconstructing past environments over a wide area. Their work initially made it obvious that what we currently call Sahara was not always desertic. Furthermore, they attempted to use motifs (mainly animal representations) as evidence for a series of gradual environmental changes that occurred there during the period from the Holocene to modern times. In doing so, they depended upon the idea that a specific animal or a group of animals associated with a particular style or corpus *must* reflect a specific time and type of environment. These reasonings were however not always clear and their arguments were sometimes circular. Their reasons for assigned calendar dates were also often obscure and ill-argued. What is now required is an evaluation of the validity of their approach.

IV. A critique of the traditional way of using rock art to document environmental change:

One may rightly believe that reconstructing Holocene environmental changes in the Sahara will be deficient, incomplete, or uncertain if we depend solely upon the accumulated data of rock art images (see for example the problems mentioned in section II, this chapter). Therefore, tracing the history of environmental change depending on Saharan rock art could be more efficient if we employed other more chronologically secure evidence derived from sedimentology, palaeobotany, archaeozoology, and archaeology. One may then ask what the state of our current knowledge on the Holocene environments of the Sahara is and how they have changed as evidence has accumulated.

IV.1 The Evidence for Saharan Palaeoenvironment:

Since knowledge of palaeoclimates in the Sahara during the Holocene is generally based on the compilation of a wide range of data, it seems difficult to ignore or omit the information that such data provide us with. In addition to the rock art subjects, which basically constitute the main topic of this thesis, I refer in this sub-section primarily to other evidence that may aid in evaluating the Saharan palaeoenvironment during the Holocene. This will include sedimentological (lacustrine) evidence, palynological (pollen) evidence, archaeozoological evidence, and archaeological (artifactual and occupation) evidence.

As we will see, this evidence proves that ecological and environmental conditions in the Sahara have radically changed. To examine whether or not the environmental reconstruction proposed by early Saharan archaeologists and other rock art researchers coincides with such changes, two aspects should be presented here: (a) summary of Holocene climatic events (taking into consideration the varying regional physical and climatic conditions), and (b) the evidence that supports such events. Choosing these two aspects is crucial since "The impact of climatic change must be assessed in terms of the link between climate, water resources, vegetation and animals" (Hassan 2000: 62).

IV.1.1 Summary of Holocene climatic events in the Sahara:

For the purposes of this study, I will concentrate only on the climatic events of the Saharan palaeoenvironment during the Terminal Pleistocene and the Holocene since the oldest phase of the Saharan rock art (*i.e.* engravings of the *Bubaline* School) is not traditionally dated earlier than the beginning of this time-range (see Chap. 1 and also section III, this chapter). Here, I give a brief history of the Sahara following the severe dry period associated with the last Pleistocene glacial maximum (at 18,000 bp).

IV.1.1.1 The Terminal Pleistocene (18,000 to 12,000 bp):

The end of the Pleistocene in North Africa, *c.* 18,000 to 12,000 bp, is characterised by a period of extreme aridity (Muzzolini 1993: 227). These climatic conditions forced both humans and animals to move out of the Sahara towards the east (the Nile valley) and to the north (the Maghreb and Cyrenaica) (*ibid.*) and to the south (the Tropical West African coast) (MacDonald 1998). "Between the tropics the climate was generally much more arid than now. Saharan dunes extended some 500 km south of their present limits, pounding back the Senegal, Upper Niger, Logone-Shari and the Nile north of Khartoum" (Grove 1993: 34).

IV.1.1.2 The Early Holocene (12,000 to 8000 bp):

After the Terminal Pleistocene dry period a humid phase, which extended from around 12,000 to 7500/7200 bp, characterised the climate of the Sahara (Vernet 2002: 47). At the beginning of the Holocene, 12,000 bp, the rains returned, and as a consequence, watercourses and deep lakes were abundant throughout the Sahara in the period from 12,000 to 7500 bp (Muzzolini 1993: 229). In the Sahel, lake levels show minimal stands at 11,200-10,100 bp and 8200-7100 bp (Hassan 2000: 62). In this regard, McIntosh and McIntosh (1988: 94) wrote: "Most Saharan and Sahelian localities [...] were experiencing stable "pluvial" conditions by *ca.* 9500 bp". Between 9500 to 8500 bp, the optimum, "all closed basins between the tropics were occupied by lakes, several of which rose more than 100m above their present-day level" (Grove 1993: 35). By 9500 bp, "the Niger breached barrier dunes and flooded the Azawad "dead delta" 300km northward. By 8300 bp, constant-level lakes in a steppe parkland environment dominated up to 24°N latitude. Rainfall was between 10 and 50 times that of today" (McIntosh and McIntosh 1988: 94). "Rivers from Ahaggar flowed down wadis to the Tilemsi and the Niger river. Stromatolites dating from 8300 to 6500 bp mark the shore of a lake in the Chemchane depression in Mauritania at latitude 21°N. Lakes so large they would have required ten times the rainfall of the present day occupied the Taoudenni depression, and between 9000 and 4500 bp the surrounding areas 300 to 700 km into the Sahara were covered with sahelian vegetation" (Grove 1993: 39). The climatic conditions which accompanied this great Wet Phase of the early Holocene led to the gradual re-occupation of the Sahara

around 10,000- 9500 bp (Muzzolini 1993: 229). Human groups of the Sahara during that period lived by hunting a variety of game, especially large ones; by fishing; and by gathering (*ibid.*). These humid conditions were followed by a brief dry episode around 10,700 bp (Vernet 2002: 47)

IV.1.1.3 The Middle Holocene (8000 to 3500 bp):

During the period between *c.* 8000/7500 bp and 7000/6500 bp a brief but severe dry phase took place in North Africa (the 'Great Mid-Holocene Arid Phase'). This was followed by the 'Neolithic Wet Phase' that occurred between 6500 and 4500 bp. As a result, territories abandoned during the preceding dry phase were reoccupied (Muzzolini 1993: 234). After a long arid phase and between 6000 and 4500 bp marshy lacustrine environments occurred in the Shati depression in Libya, while at the same time a sharp increase in precipitation took place in the Maghreb on the northern margins of the Sahara (Grove 1993: 40).

In the regions north of the Tropic of Cancer the last moist climatic episode occurred around 6500 bp (Vernet 2002: 52). At Taoudenni in the central Sahara two transgression/regression sequences took place between 8800 and 8300 bp, this was followed by four transgression/regression sequences between 8300 and 6900 bp and eight or nine between 6760 and 3840 bp (Grove 1993: 39). These humid conditions lasted until 4500 bp where arid conditions began. The Lakes in Taoudenni, for example, dried up by this date. In Tibesti, arid intervals have been occurred from 5400-4300 bp and 3500-2900 bp. In the south of Azawad, lakes persisted until about 3500 bp. However, the mid Holocene humid conditions probably lasted until 4000 bp along the Mauritanian coast where the vegetation of sahelian type extended 4° N of its present limits (*ibid.* 41).

IV.1.1.4 The Late Holocene (3500 bp to present):

"A final amelioration of aridity took place after 3500 BP" (Grove 1993: 41). "From 3000 bp onward, precipitation became weaker and more violent, lakes and marshes surfaces began to evolve into sebkha, the vegetation rapidly deteriorated and dunes started to reform" (Vernet 2002: 55). "The transition from the moist/wet intervals of

the early-middle Holocene to the present conditions of aridity was apparently a result of a migration of the wetting front southwards and perhaps westwards" (Hassan 2000: 63).

"The change from the wetter conditions of the early Holocene was gradual from 4500 bp to 3000 bp [...] By *c.* 3000 bp the transition to the modern desert landscape was complete." (Hassan 2000: 77). This climatic change, led the population of the Late Stone Age in West Africa during the period between 4000 and 3000 bp to settle around the well-watered environments such as the Tichitt lakeplain, the Tilemsi Valley, the Agadez basin (McIntosh & McIntosh 1988: 99; Vernet 2000: 55). After 3000 bp the climatic conditions became close to those of the present (McIntosh & McIntosh 1988: 100). From 2500 bp on, aridity spread throughout the Sahara: in the south, and in Egypt, as well as in the west (Vernet 2000: 56).

IV.1.2 Evidence of Saharan Palaeoenvironment during the Holocene:

A variety of palaeoenvironmental data has been obtained from the Holocene of the Sahara over the past three decades of research. Here, I give a detailed account on the subject derived from sedimentology, palaeobotany, archaeozoology, and archaeology.

IV.1.2.1 Sedimentological (Lacustrine) Evidence for Saharan Palaeoenvironment:

As Lézine (1989: 317) states "Recent geomorphological and limnological research [...] has confirmed and elaborated earlier hypotheses about the extensive former lakes in areas of the Sahara, now occupied by desert, during the early Holocene "pluvial" episode (9500-4500 B.P.)". The simple idea of such type of research is that each layer is supposed to define an ancient landscape. Consequently, the sediments of basins and/or the deposits of palaeolakes constitute one of the most important sources that provide us with direct evidence for palaeoenvironmental change.

The excavations in the Nabta Playa (Eastern Sahara, Egypt) indicate that "the playa lake in the Nabta Basin underwent three major wet periods resulting in the deposition of phytogenic dunes and freshwater sediments [...] these episodes [...] probably extend from before 10.000 bp until 5800 bp or slightly later. The earliest of the wet

periods is coeval with the Early Neolithic of the Western Desert, the middle one with the Middle Neolithic and the uppermost with the Late Neolithic" (Gautier *et al.* 1994: 8).

At Selima Oasis site (21°22'N, 29°19'E) in the hyperarid core of the eastern Sahara, and at El'Atrun Oasis site (18°10'N, 26°39'E) 450 km southwest of Selima, near the southern limit of the hyperarid, absolute desert zone, fossil-bearing Holocene lake sediments have been discovered. These moist lacustrine sediments, which consist of alternating units of carbonate precipitates, diatomites and algal gyttjas, constitute one of the most important source of evidence for the occurrence of a major pluvial episode during the period 9,500 and 4,500 BP. (Ritchie and Haynes 1987: 645). Also, Holocene lacustrine sediments have been located in the Oyo depression in northwest Sudan, in the hyperarid core of the eastern Sahara.

In the region of Erg Ine Sakane and Tagnout-Chaggeret some 400 km west of the Tilemsi Valley, Malian Sahara, there is evidence for a series of freshwater lakes some of which extend over about 200 km^2. A radiocarbon date obtained from fish bones found in the context of deposits of these palaeolakes is 6590 ± 320 (Petit-Maire *et al.* 1983: 108). Also, lacustrine deposits which are rich in mollusc shells have been located in Erg Tin Guettai and in Hassi el Abiod; the former deposits gave a date of 4970 ± 60 bp while the latter gave an older date which goes back to the early Holocene humid episode: 8450 ± 60 bp (*ibid.* 117). In Erg Jmeya region, which extends west to east from Chiguetti, in the Mauritanian Sahara, to Erg Ine Sakane in the Malian Sahara, palaeolake deposits also rich in molluscs have been identified and yielded a date that goes back to 7050 ± 80 bp (*ibid.* 114). Similarly, lacustrine deposits dated to 6,150 BP have been found in Amoukrouz in Mauritania (Barey in Lézine and Casanova 1989: 48).

Further research shows that "plustrine and lacustrine deposits in the entire Sahelian zone from the Atlantic coast to the Baher El Ghazal testify to the higher water levels during [the brief arid phase that took place from 4,000 to 2,500 BP]" (Lézine and Casanova 1989: 48). According to Lézine and Casanova (*ibid.*) "Three episodes of high lake levels characterize the central Sahel during the Holocene. They are dated between 9.3 ka and 7.7 ka BP, 4.6 ka and 4.5 ka BP, and 4 ka and 2.5 ka BP".

Palaeohydrological conditions that occurred in Tropical West Africa and the Sahara during the Holocene led Lézine and Casanova (1989) to conclude the following:

> About 12 ka BP, humidity increased in tropical West Africa. This increase is reflected on the land by evidence of fluviatile run-off in the Niger and Senegal river basins, in the Sahelian coast, in the Air and the Tibesti massifs [...] Only after 9 ka BP wet conditions entirely covered north tropical West Africa, and the wettest period is dated at 8.5 ka BP. Wetter conditions than present extended up to the Tropic of Cancer (Hoggar Massif). Immediately after this wet phase, hydrological conditions became drier, as early as 8ka BP, in the Sahelian zone, and by about 7.5 ka BP rainfall had declined over the Tibesti massif. High ground-water level still characterized the Saharan zone. Between 7 ka and 4 ka Bp, the spatial pattern of moisture conditions changed. The Sahara was arid and was more dry in the western area (sebkha of Chemchane) and over the relief (Tibesti massif) than in the eastern area (Sudan). [...] A second general positive hydrological phase occurred between 4 ka and 2.5 ka BP [...] Ground water levels remained high in the Saharan zone until 8 ka Bp and decreased only after 7 ka BP. The southern zone (Sahelian and South-Sudanian), however, record decreased moisture just after the 8.5 ka BP 'humid' maximum. During the middle Holocene, Palaeohydrological conditions do not appear to have been under the influence of a zonal mechanism but varied according to the geological setting of each basin. Another phase of generally increased moisture occurred between 4 ka and 2.5 ka BP, the magnitude of the increase was less than that during the early Holocene period. North of 14° latitude hydrological conditions became drier as early as 2.5 ka BP and became even drier around 2 ka BP.
>
> (Lézine and Casanova 1989: 51)

The above examples leave us with no doubt that the great Sahara has significant ecological and environmental changes that took place during the Holocene. In other words, these lacustrine deposits confirm that during the more humid periods of the Holocene, the area between the Atlas ranges and the Tebesti massif included "hydrographic centres from which rivers radiated to interior basins and to the Nile and Niger systems" (Grove 1980: 10).

IV.1.2.2 Pollen Evidence for Saharan Palaeovegetation:

Palaeobotanical and palynological research provides us with direct evidence of Holocene vegetation zonation, and consequently with data required for understanding

palaeoclimatic and environmental changes that occurred in the Sahara during that period.

As Sinclair *et al.* (1993: 14) state "during the period of maximum precipitation, the zone of sahelian vegetation advanced far to the north of its present northern boundary".

Further north, at el Gabel el Akhdar (Libya), traces of the flora (including the conifers, *Cupressus*, and *Pinus halapensis*) have been identified and are dated between 11,600 B.P. and *c.* 35,000 B.P. (Higgs 1967: 31). According to Street-Perrott and Perrott (1993: 322) "the late-Quaternary pollen record from North Africa consists of alternating phases dominated by either Mediterranean forest or pre-Saharan steppe and dryland taxa". For example, pollen assemblages have been found in Tigalmamine, Morocco, and dated to the period 18,000 and 8500 BP. These assemblages that include Chenopodiacea, *Artemisia*, Gramineae, and evergreen *Quercus*, can be taken as an indicator of an open, steppe-like environment that is characterised by a too dry or a too cold climate or even both. A climatic shift around 8500 BP to more humid conditions is evidenced by the phenomenon of the sharp increase of *Quercus* and the decrease of herbaceous taxa. The period from 4000 BP onwards, is characterised by the decline of deciduous *Quercus* and the abundance of *Cedrus*, a phenomenon which indicates significant climatic change to drier and cooler conditions (*ibid.*).

Further south, significant changes in regional vegetation also occurred from the early Holocene up to 4500 BP. Between 8500 and 6100 BP, Lake Oyo (19°16'N, 26°11'E) in Sudan, for example, was surrounded by tropical taxa (a deciduous wooded grassland with a Sudanian element). In the period between 6100 and 4500 BP, Sahelian thorn scrub and semidesert grassland replaced the tropical taxa. By 4500 BP the spread of desert conditions resulted in drying out the lake (Street-Perrott and Perrott 1993: 324). The decrease of annual rainfall, from 400 to 300mm after 6000 BP and to 5mm after 4500 BP, caused intensified aridification and produced the cover vegetation of the current Sahara (Lézine 1989:227).

Palynological analysis of lake sediments at Selima and El'Atrun sites in the eastern Sahara proves that considerable changes on vegetative cover had occurred where the

savanna and desert grassland, covering the surroundings of both sites between 9,500 and 4,500 BP, was replaced by the current plantless hyperarid deserts (Ritchie and Haynes 1987: 645). According to the pollen record from these two sites Ritchie and Haynes (*ibid.* 647) suggest the existence of "a steep vegetation gradient in the eastern Sahara during an early to mid-Holocene pluvial, with a zonation of wooded savannas at the latitude of El'Atrun and sparsely wooded desert steppes at the latitude of Selima".

Further west, vegetation modifications took place in West Africa at *ca.* 9000 bp. Such changes are as follows: a semi-deciduous forest formation abruptly replaced former grasslands in the lake Bosumtwi area at 6°30'N; a Guinean mesophilous forest developed at the expense of Sahelian pseudo-steppes near the coast between 15° and 16°N; Sudanian and Sudano-Guinean vegetation extended in the central Sahel at 14°N; a typical Sudano-Sahelian covered the southern margin of the Sahara (Lézine and Casanova 1989: 49). The extension of the wooded Sudano-Sahelian taxa up to the Tropic of Cancer during the Early Holocene is evidenced by the presence of Sahelian taxa and the humid type vegetation at Seguedine, Niger, between 8500 and 6500 BP, and at Taoudenni, Mali, before 5650 BP (Lézine 1989: 227). The pollen content of the deposits of the Chemchane depression in Mauritania shows the significant regional vegetative change that occurred by 8300 BP, that is to say, the replacement of the Saharan vegetation (*Ephedra*, *Artemisia*, Cruciferae, and *Tamarix*) by Sudano-Sahelian elements (*Celtis integrifolia*, *Lannea*, *Rhus*, *Securinega virosa* and *Alchornea*). This important change coincids with the sharp increase in rainfall that occurred between 8300 and 6800 BP (*ibid.*). Palynological research in the western portion of the Sahara shows that during the pluvial and interpluvial (18,000-5,500 B.P) the vegetation zones had migrated on the Saharan margins (Lauer and Frankenberg; Schulz in Petters 1987: 21, see also Fig. 13 p. 23 the same reference).

The evidence represented above, therefore, leaves us with no doubt that significant changes have occurred in the Sahara during the Holocene. The pollen evidence given here, leads one to conclude that the vegetative cover during the Early and Middle Holocene offered favourable habitats for variety of animal species that are now extinct in the Sahara (see below) as well as for the ancient human population who left

a huge corpus of rock art images which depict the most common fauna that once lived in this wide area before it becomes just the barren place we know nowadays.

IV.1.2.3 Archaeozoological Evidence for the Terminal Pleistocene and Holocene Sahara:

Faunal remains are one of the main sources that offer valuable information on environmental change in a particular area within a particular period of time. The study of faunal remains found throughout the Saharan zone along with the information obtained from other evidence, then, contribute in understanding the Saharan palaeoenvironment and, hence, in evaluating the palaeoenvironmental picture obtained from the analysis of rock art images.

IV.1.2.3.1 Long-term evidence from Haua Fteah (Libya):

IV.1.2.3.1.1 Avifauna Remains:

"Birds as extremely mobile and environmentally sensitive animals are climatic indicators par excellence" (MacDonald 1997: 82). Accordingly, avifauna remains of the birds, which are now alien to the Sahara, can be used in establishing a chronological sequence for palaeoenvironmental changes in this wide zone. I have chosen here one of the pioneering studies that made possible the use of avifauna remains as evidence for Saharan palaeoenvironmental change.

In 1989, MacDonald (1997) worked on the as yet unstudied avifauna assemblage found by McBurney during his excavations of the Haua Fteah or "Great Cave" -which lies near the sea at the foot of el Gebel el Akhdar hills (Libya) - in 1951, 1952 and 1955. During his work, MacDonald examined 703 fragments of bird remains belonging to at least 65 taxa spanning a period of well over 100,000 years (the period of human occupation of the Haua Fteah). One of the most significant contributions of MacDonald's work is that he characterises certain avifaunal groups by period and, consequently, gives us a clear idea about past climatic and palaeoenvironmental changes over this long period of site occupation. According to his study:

> The number of species, and specimens, present in the assemblage may be seen to peak in the early to mid Holocene periods (Neolithic/Libyco Capsian), where there is also taxonomic evidence for freshwater, woodland and marine habitats near the shelter. Bird remains reduce in number and diversity during the Iberomaurusian [...] potentially as a consequence of the arid episode that [...] took place between *ca.* 20,000 and 12,000 bp.
>
> (MacDonald 1997: 89)

Another important conclusion of MacDonald's study which should be included here is that after relatively little exploitation of birds until the mid-Holocene wet phase, when a more broad spectrum exploitation of bird species by humans came into being. In part, this was due to advances in hunting techniques.

IV.1.2.3.1.2 Mammalian Faunal Remains:

According to Petters (1987: 14) "The fossils of African forest mammals such as elephant, rhinoceros, cattle, deer, giraffe and hippopotamus which have been reported from the Sahara [...] attest to the existence of pluvial conditions in the Sahara earlier in the Holocene". The following examples show the significance of such remains in reconstructing palaeoenvironment in north-eastern region of the Sahara.

Higgs (1967) studied the mammalian faunal remains from the Haua Fteah (Libya) in an attempt to reconstruct the palaeoenvironment of the site. The 12,000 identifiable bones collected from the various layers of the Great Cave represent *Caprini* (*Ovis sp.*, *Capra sp.*, and *Ammotragus sp.*-the Barbary sheep), large bovines: *Bos* or *Homoioceros*, *Equus mauritanicus*, *Equus sp.*, *Microtus sp.*, *Hyaena crocuta*, *Hyaena sp.*, *Hystrix sp.*, *Rhinoceros cf. simus*, *Rhinoceros merckii*, *Rhinoceros sp.*, *Antelope sp.*, *Testudo sp.*, *Alcelaphus sp.*, *Gazella dorcas*, *Gazella sp.*, *Canis anthus*, *Vulpes sp.*, *Oryctolagus cuniculus*, *Lepus sp.* (*ibid.*16-21). Higgs attributes relative fluctuations in the three main food-animals (large bovines, the gazelle, and the Barbary sheep) to either environmental change or changes in hunting techniques (*ibid.*). As to the environmental changes, Higgs suggested a sequence of colder (forested) and warmer (forest/steppe mosaic) periods (Higgs in MacDonald 1997: 83). This suggestion is, as Higgs pointed out, based upon the environmental conditions of the habitats of these species:

> There are three main types of food animals represented at Haua Fteah. There are large bovines, there is the gazelle, which requires little water and is likely to become more important in the cave as the desert steppe creeps nearer. There is also the Barbary sheep; with its ability to endure a wide climatic range and its indifference to water supplies it forms an intensive yardstick. The Barbary sheep, even in thick-frosted conditions, would find a terrain suitable to it on the extensive cliffs and steep wadi sides of the northern slopes of the Gebel.
>
> (Higgs 1967: 27)

Klein and Scott (1986) re-examined these mammalian faunal remains confirming the identification of domestic cattle and goat in the "Neolithic" layers of the cave. Additionally, domestic dog was found in Libyco-Capsian and later layers.

MacDonald (1997: 89) refers to the importance of mammalian faunal remains (*e.g.* Barbary sheep, Gazelle, Aurochs, white rhinoceros, zebra, eland and hartebeest) in the palaeoenvironmental reconstruction of Haua Fteah site. While the first three species constitute the great part of mammalian faunal remains and occur throughout the assemblage, the other four species (which are now restricted to Sub-Saharan regions) are only represented in the Late Iberomaurusian and Pre-Aurignacian periods, indicating two distinct Saharan climatic optimums (*c.* 100,000 bp and *c.* 12,000-10,000 bp).

IV.1.2.3.1.3 Fish Remains:

Fish and invertebrate remains found in the deposits of Haua Fteah Cave indicate that freshwater and marine habitats occurred around the site. Fish remains occur in Historic, Neolithic and Pre-Aurignacian periods while invertebrates (the limpet, *Patella coerulea* and the top shell, *Trochus turbinatus*) occur in Neolithic, Libyco-Capsian, Ibromaurusian and Pre-Aurigacian periods (see Klein & Scott 1986; MacDonald 1997). Absence of the above invertebrate remains at these now coastal North African sites, therefore, can be taken as evidence for a retreat of shoreline through the Dabban and most of the Mousterian (MacDonald 1997: 89).

IV.1.2.3.2 Faunal Remains (by Taxon):

Following to what is represented above, I will divide in this sub-section a number of faunal remains discovered in the Saharan sites by taxon. The aim of this is to compare the dates given to these assemblages with those given to the same animal species represented in the Saharan rock art.

IV.1.2.3.2.1 Elephant (Loxodonta africana):

In the Western Egyptian Desert, fragments of three fossilised elephants have been found. The first, which is positively identified as *Loxodonta africana*, was found in the Holocene deposits of Nabta Playa, but careful analysis and biochemical tests confirmed that this elephant is a reworked remnant derived from a Middle Palaeolithic site and goes back to several tens of thousands years. The second elephant, which is thought to be re-deposited, was discovered in a Neolithic site in the Bir Kiseiba region. The third fossilised elephant, which is also not in primary context, came from Middle Palaeolithic contexts in the Jebel Uweinat (Gautier *et al.* 1994: 7-11). In the Serir Calanscio, wadi Behar Belama, central Libya, mandible fragments of an elephant were found in fine alluvia. Radiocarbon date obtained from these fragments placed them between 3400 and 2400 bp. This pachyderm "could be one of those hardy elephants living along a major wadi system which may have received water from the Tebesti apparently in quite late Holocene" (*ibid.* 16). Although depicted in rock art, osteological remains of elephants are virtually unknown from recent excavations in the Sahara west of Lake Chad. The remains examined by Gautier *et al.* (1994) confirm what zoologists observe today: elephants can survive in quite marginal African environmental conditions.

IV.1.2.3.2.2 Domestic Dog (Canis familiaris):

Domestic dog remains have been found at Merimde of Egypt. They are dated to 6000 bp/5060 BC (MacDonald 2000: 11). Osteological evidence suggests that dogs existed elsewhere in North Africa from at least 6000 bp (Klein and Scott 1986). "Jackal"

remains dated to the second millennium BC have been found at Khatt Lemaitag in Mauritania, but it is believed these may be domestic dog (MacDonald & MacDonald 2000: 137). "Possible" dog remains dated to the fourth millennium BC have also been found at Arlit in Niger (Smith 1980: 457). Also, three definite domestic dog skeletons (belonging to a greyhound group) have been located in the deposits of the Neolithic village of Chin Tafidet, the western Air, which was occupied from 3900-3300 bp (Paris 2000: 114-17). Except for the domestic dog remains found at Chin Tafidet in Niger and dated to at least the early second millennium BC (Paris 1992), domestic dog remains have not yet been definitely documented from any other West African sites dating to before 200 BC (MacDonald & MacDonald 2000: 129). From the first millennium AD contexts of Jenné-Jeno, Akumbo, Tongo Maare Diabal, and the Middle Senegal Valley sites, MacDonald and MacDonald (2000: 137) were able to identify a number of canid remains as domestic dog (*Canis familiaris*). At these later sites it appears in some instances two breeds were kept: one for hunting and one for eating.

IV.1.2.3.2.3 Equids: Horse (Equus caballus) and Donkey (E. asinus):

Osteological evidence shows that domestic donkeys existed in Egypt during the pre-Dynastic period (*c.* 3500-4500 BC) (MacDonald 2000: 10). Three skeletal remains of domestic donkeys dated to 4500-4000 BC have been discovered in Egyptian tombs (Clutton-Brock 1992).

At Rop rock shelter (Nigeria), an arguably equid tooth has been recovered and was supposedly dated to the first millennium BC (Sutton 1985). No finds of equid remains have been found from the southern Sahara to the coast pre-dating the beginning of the Christian era. The earliest definite domestic horse remains in West Africa have been found at the Middle Senegal Valley tell sites and at Akumbu on the left bank of the Niger. According to the size of the discovered assemblages, the first equid remains, which dated to *c.* AD 1-400, have been identified as ass/donkey (*Equus asinus*) because of their small size. Those from Akumbu, which are dated to AD 600-100, have been identified as horses (*E. caballus*) because they are larger in size compared to the former (MacDonald & MacDonald 2000: 139-40). The absence of domestic equid remains in West Africa pre-dating the birth of Christ has led MacDonald and

MacDonald (2000: 140) to conclude that they were extremely rare or prior to more extensive North African trade contacts.

IV.1.2.3.2.4 Camel (Camelus dromedaries):

Several, controversial, camel bone remains of Capsian date (*c.* 9000-6000 bp) have been recorded in North Africa in addition to some of supposed "Neolithic" date from the Maghreb (MacDonald 2000: 13). These are old finds dated by stratigraphy alone, however, and are likely to be intrusive. Data from Qasr Ibrim (southern Egypt) place the introduction of camel to Africa in late first millennium BC/early first millennium AD (Rowley-Conwy 1988; MacDonald 2000; MacDonald & MacDonald 2000). Osteological remains of camel in West Africa south of the Sahara have been found at two sites: Siouré in the Middle of Senegal Valley dated between AD 250 and AD 400, and Tegdaoust in Mauritania throughout the Medieval period (MacDonald & MacDonald 2000: 141- 2).

IV.1.2.3.2.5 Domestic Cattle (Bos taurus and Bos indicus):

In the southern part of the eastern Sahara, cattle bones have been found in early Neolithic sites dating back to 9000 BP (MacDonald 2000: 2). One radiocarbon date associated with bone remains of domestic cattle at Nabta Playa is 8840 ±90 BP (Gautier 1980; Wendorf and Schild 1980). Other cattle remains (*Bos taurus*) dating to *c.* 9500 BP have been found at Bir Kiseiba (Gautier 1984). More than twenty cattle bones from the early Neolithic site of Nabta Playa and Bir Kiseiba have been dated to the period between 9500-8900 BP (MacDonald 2000: 5).

Evidence from southwestern Libya and southeastern Algeria indicates that cattle appeared there between 7000 and 6500 BP (MacDonald 2000: 8). Deposits at wadi Ti-n-Torha North (Libya) dated between 7000 and 6500 BP yielded cattle bones and ovicaprines (Barich in MacDonald 2000: 8). Domestic cattle remains have been found in the Acacus in the southwestern Libya and dated to 7440 ± 220 bp, in addition to a domestic *Bos* skull dated to 5950 ± 120 bp (Hassan 2000: 69). Cattle remains have also been found with sheep and goat at Capeletti in Algeria. The date given to these remains is the sixth millennium bp (6530 ± 250 bp) (Clutton-Brock 1993: 66). Cattle

remains from Ti-n-Hanakaten (Algeria) have been dated to the period from 7220 ± 140 BP to 5800 ±120 BP (Aumassip and Delibrias in MacDonald 2000: 8). These dates enable MacDonald (2000: 9) to suggest that "cattle were present in most of North Africa (including the Sahara) by at least *c.* 6500 bp".

Domesticated cattle are also recorded in West Africa and the Sahel. Cattle remains (cattle and possibly sheep or goat, in addition to other faunal remains: gazelle, African Buffalo, elephant and giraffe) have been found associated with fireplaces at Enneri Bardague in the Serir Tibesti in the north of Chad. Radiocarbon date obtained from these bones is 7455 ± 180 BP (see MacDonald 2000: 8; Gautier 1987: 174). Domestic cattle remains from Delebo, Chad, are dated to 7180 bp (Hassan 2000: 73). Other domesticated cattle remains have been recovered from the Adrar n'Kifi (Saharan Niger Republic) and dated to the period between 6325 ± 300 bp and 6200 ± 250 bp (MacDonald & MacDonald 2000: 127). Charred *Bos* bones (approximately 6200 ± 250) have been recovered from a stone tumulus at the Tenerian site AB S1, north of Adrar n Kifi (Paris 2000: 121). At Agorass-in-Tast (the Valley of Adrar Bous, northern Niger), bones of domestic cattle dated to 5780 and 5740 bp have been recovered (Hassan 200: 77). In the vicinity of Air Massif, west of Lake Chad (Niger), remains of domesticated cattle have been recovered and attributed to "Tenerian Neolithic". These finds include the so-called Adrar Bous cow: A female *Bos taurus* (about two to five years old) of medium breed size recovered intact at Agroras in Tast (Adrar Bous) and dated to 5760 ± 500 bp (MacDonald & MacDonald 2000: 127; Paris 2000: 119). At Arlit, west of the Air, bone remains of domestic cattle have been recovered and dated to 5100 B.P. (A. B. Smith in McIntosh & McIntosh 1988: 99). At the great Erg Ine Sekane, northern Mali, bones of domestic cattle have been recovered from a Neolithic context dated to 4000 B.P. (Petters 1987: 21). Eighteen cattle bones (belong to *Bos taurus*) dated between 3900- 3300 bp have been recorded at the Neolithic village of Chin Tafidet, the western Air (Paris 2000: 114- 5). *Bos taurus* remains have also been found at In Tuduf, 10 km to the northwest of Chin Tafidet and dated to 3500 bp (Paris 2000: 117). In Mauritania, cattle remains have been recorded at Dhar Tichitt and dated to 3500 bp (Gautier in Hassan 2000: 78). Cattle remains from Winde Koroji dated to the late third or early second millennium BC are considered the earliest found south of the Senegal or Niger River (MacDonald & MacDonald 2000: 129). A considerable number of cattle skeletons (mainly *Bos*) have

been excavated from Neolithic dwelling sites (Tagudalt, Awkare, Akarao, Alabakat and Tin Kulna) in the area of Ighazer wan Agadez to the south of the Talak-Timersoi, the western Air (Niger) (Paris 2000: 112).

All the foregoing remains have been of humpless cattle (*Bos taurus*). As to the domestic humped cattle (*Bos indicus*), the short-horned and cervico-thoracic humped zebus of Asiatic origin were known in Egypt and date from the second millennium BC onwards. The long-horned and humped cattle depicted in the Central Sahara are believed to date to at least the first millennium BC (Muzzolini 2000: 94). However, *Bos indicus* or humped cattle bones have only been dated to *c.* AD 800-1400 at both Jenné-Jeno and Siouré (MacDonald and MacDonald 2000: 132). Muzzolini discussed the timing of the introduction and diffusion of this type of cattle in the Sahara. According to him, "such cattle were present in the current millennium, when the diffusion of the zebu (*Bos indicus*) or intermediate type (mainly Sanga cattle and Fulani cattle) is undeniable" (Muzzolini 2000: 94). Since the Saharan humped cattle are older than the introduced Asiatic zebus, Muzzolini suggests that the idea of an independent origin of African humped cattle "seems more likely than the possibility of very ancient Asiatic import" (*ibid.* 96). However, the majority of scholars do not agree with this assertion and believe that humped cattle were introduced from Asia into East Africa no earlier than the late second millennium BC (Blench & MacDonald 2000).

IV.1.2.3.2.6 Domestic Ovicaprines: Sheep (Ovis aries) and Goat (Capra hircus):

According to MacDonald (2000), ovicaprines were introduced into Africa from South West Asia around 7000 bp and occur side-by-side with cattle thereafter. They are present in the middle Neolithic (7700-6500 BP) of the eastern Sahara (MacDonald 2000; Wendorf and Schild 1994). Their remains have been recorded in the Sodmein Cave near Qusseier, Red Sea Hills, Egypt, and dated to just after 7000 bp (Vermeersch *et al.* in Hassan 2000: 61, 71). Bone records give "an early date of about 6500 BP for goat from the Neolithic Capsian of eastern Algeria" (Clutton-Brock 1993: 68). In this regard, Hassan (2000: 61) reports that cattle and livestock spread in the central Sahara by 6500 bp. Osteological remains of domestic caprines have also been recorded at Haua Fteah site in the north of Cyrenaica, Libya and dated to the

fifth millennium BC (Clutton-Brock 1993: 69). Goat or sheep remains have been recovered from the Neolithic village of Chin Tafidet (3900-3300 bp) in the western Air (Paris 2000: 114). Osteological remains of true dwarf goats dated to the early first millennium BC have been found at Kolima-Sua (MacDonald & MacDonald 2000: 133).

IV.1.2.3.2.7 Fish and Invertebrate Remains:

Fish remains and freshwater molluscs recovered from palaeolake sediments at some Saharan sites offer important indicators of the humid/arid conditions during the Holocene.

As alternations of wet and dry phases lead to fluctuations in water level, fish remains can be used in studying the seasonal changes of large rivers, as well as places of capture of the fish (Van Neer 1984: 157). Van Neer gives the following example that shows how fish bones can be useful in establishing what types of water bodies were present and the seasonality of fish capture:

> Adult Nile perch (*Lates niloticus*) [...] lives in deep well-oxygenated water and never leaves the main channel of the river. If bones of adult Nile perch occur on a site, there can be little doubt that the inhabitants practised fishing in the main river [...] On the other hand, catfish of the family *Clariidae* and lungfish (*Protopterus*) can survive in very adverse conditions, as they are able to breathe atmospheric oxygen. High frequencies of the bones of these fishes on archaeological sites indicate that fishing was practised mainly in shallow, deoxygenated water. When the water recedes from the alluvial plain, *Clarias* is restricted to pools and ponds and is then easy to catch, even by hand. *Protopterus* prefers shallow, marshy places and burrows into the mud as the alluvial plain continues to dry out. During this period lungfishes can easily be dug from their burrows.
>
> (Van Neer 1984: 157)

Furthermore, shifts in distribution of fish taxa indicate that environmental changes have occurred. In this regard, Van Neer gives the following example:

> "Today *Polypeterus* is found in the Lower Nile, but we have found no record in the literature of *Polypterus* during the Quaternary, nor we have found *Polypterus* remains in archaeological material from that country [...] It seems probable that *Polypterus* recolonized the Lower Nile after the Pharaonic period, since there are fossils of *Polypterus* from the Cretaceous-Eocene and the Middle Pliocene (Wadi Natrun) of Egypt".
>
> (Van Neer 1984: 160)

From the Sahara, numerous sites with fish remains have been found. Taking into account such facts given above, the study of these ichthyofaunal remains provided us with very useful information about the palaeoenvironmental conditions in this wide zone.

At the site of Ti-n-Torha, Libya, which is dated to the period between 8,000 and 9,000 BP, fish remains of small *Tilapia* have been identified (Gautier and Van Neer 1983). From growth rings in these bone remains, Van Neer was able to obtain valuable information about the size of watercourse from which the fish were taken. In this regard he wrote: "The growth rings [...] showed that the fish were adult. This form of nanism is well known in cichlids and was probably a result of limited availability of water" (Van Neer 1984: 157).

At Wadi Kubbaniya (Upper Egypt), fish remains (mainly *Clariads* and also *Protopterus*) have been recovered from a Late Palaeolithic site dated between 18,000 and 12,000 BP (Gautier *et al.* 1980). Van Neer (1984: 158), therefore, interpreted this site as a dry season camp since *Clariads* are among these species which are easy to catch by hand when flood plain waters recede.

An extraordinary density of fish bones have been found in the large middens located on top or on the slopes of dunes close to the Holocene lakes of Hassi el Abiod in the Malian Sahara. These fish bones are identified as very large Perciidae (*Lates sp.*) and Siluridae. A radiocarbon date obtained from a large fish bone is 6970 ± 130 bp (*ibid.* 119). In addition to the fish bones recovered from these highly fossiliferous palaeolake terrace sediments of the great Erg Ine Sekane, preserved mollusc-shells have been found in abundance. They include *Melanoides tuberculata, Bulinus truncates, Biomphalaria pfefferi, Aspatharia sp., and Limicolaria turriformis* which

still live today in the swampy environments of the Southern Mali (Petters 1987: 21). Lake sediments of a depression at Tichitt (Mauritania) also yielded a considerable number of *Melania tuberculata* (Petit-Maire *et al.* 1983: 109).

IV.1.2.4 Archaeological evidence for Saharan Palaeoenvironment:

The study of archaeological finds recovered from the Saharan sites may provide us with important information on ancient inhabitants' adaptation to their natural environment. As we will see below, archaeological remains such as fireplaces, stone tools, pottery, bone artefacts, figurines, rock drawings associated with burials, as well as human remains, indicate the now desertic place once offered a favourable habitat for human occupation during the different periods of the Holocene. In other words, archaeological remains could be seen as a response to the interaction between man and his environment.

IV.1.2.4.1 Fireplaces:

Circular concentrations of stone fragments, termed 'stone places' or 'fireplaces' are among the artifactual materials that can be taken as records of past human occupation in the Sahara.

These fireplaces have been discovered in many different regions (*e.g.* south-west of Kharga in Egypt; south of Djanet, west of Mount Tiska in Algeria; south of Laqiya Arbian in the northern Sudan). According to the radiocarbon dates and other associated archaeological remains they are of Neolithic age: "ranging from *ca* 9000 to *ca* 3500 bp, with a maximum occurrence at 5800-5000 bp" (Gabriel 1987). Fireplaces dated to the period from 5800 and 5300 bp are thought to be "related to generalized foragers and hunters who probably kept cattle. Their movement was a result of the unstable climatic conditions between 7800 bp and 5900 bp, with severe droughts at 7000 bp and 6000 bp with pronounced interannual variability" (Hassen 2000: 77). Fireplaces from Erg Ine Sakane and Tanout-Chaggeret in the Malian Sahara yielded osteological remains of Perciidae and Siluridae (fish), crocodiles, large bovids, elephants, hippopotamus and rhinoceros. The dates obtained from these samples range from 6590 ± 320 bp to 3680 ± 100 (Petit-Maire *et al.* 1983: 108). Since traces of

charcoal in the stone of fireplaces are scarce, this evidence can be taken as an indicator of an unwooded, scrub grassland environment for these Neolithic sites (Gabriel 1987: 100).

Their wide distribution over the Sahara implies that "people not only traversed these regions to get from one point to another [...] but that they lived there and were able to support themselves from local resources and products" (*ibid.* 94). As to the palaeoecological significance of these fireplaces one can find the following:

> [These] locations were most favoured spots during the Neolithic period, where small groups camped for a short time. We think that the people found water here for themselves and for their animals, maybe in shallow pits or even in wells, and that they migrated from one water hole and grazing area to another. [Then] we may reconstruct a landscape in the Saharan great plains during the neolithic period which was quite similar to the Sudanese Sahel zone today. [The frequency of fireplaces] seems to be a good indicator of population density, at least during the main and final stage, but not definitely so during the initial stage, when people had to adapt to a new economic form, perhaps to altered ecological conditions, and so gradually advanced to animal husbandry, to cattle pastoralism [...] After 5000 bp survival became more and more difficult; and 1200 years later the open plains of the Sahara were more or less empty.
>
> (Gabriel 1987: 100-1)

IV.1.2.4.2 Waisted or Grooved Stones:

Large grooved stones have been discovered in some locations with fireplaces. The importance of these stones lies in that they were used for tethering the domestic cattle (Pachur in Gabriel 1987: 95). Rock art images from southern Libya depict cattle, mainly male animals or bulls, tethered to these grooved or waisted stones (Castiglioni and Negro in MacDonald 2000: 8). However, as Morel (1982) claims, these grooved stones may also have been employed in attaching game traps. In both cases, the existence of such stones probably reflects at least a steppic environment in the catchments of these sites. These hypotheses may find acceptance if one takes into consideration two remarks. First, these big grooved stones are associated with some of those fireplaces dated from *ca.* 9000 to *ca.* 3500 bp as mentioned above. Second, osteological remains of cattle, though few in number, are found associated with stone places and large grooved stones (Gabriel 1987: 95, see also Willcox 1984: 33). Both

observations, therefore, indicate that a steppe or even wooded savanna was present during this time span in some regions of the Sahara.

In addition to waisted or grooved stones mentioned above, cave paintings and rock engravings of tethering stones attached to the feet of wild and domesticated savanna animals have been discovered in the eastern Sahara desert (see, for instance, Pachur and Kropeli in Petters 1987: 14; Anati 1994b: 118-9 and Fig. 97; Winkler 1938: 21 and Pl. XVIII. 2; Dunbar 1941: Pl. VI., Fig. 23). Such drawings in the now hyperarid mountainous areas "attest to the existence of pluvial conditions in the Sahara earlier in the Holocene" (Petters 1987: 14).

Fireplaces and tethering stones, for instance, are considered to be indicators of cattle domestication. This combined with represented cattle in rock art can lead us to reconstruct environments in the Sahara by looking at other rock art images contemporary with 'known date' tethering stone depictions.

IV.1.2.4.3 Stone Tools, Pottery, Bone Artefacts and Ornaments:

Chipped and polished stone tools, ornaments (such as stone and ostrich egg-shell beads), in addition to pottery have been observed in association with the palaeolake deposits in Erg Ine Sakane and Tagnout-Cheggeret in the Malian Sahara (Petit-Maire *et al.* 1983: 108). According to Petters (1987: 21), these artefacts indicate a sedentary agricultural way of life in these Neolithic settlements which are dated to before 4000 bp. He adds: "This implies hydrological conditions which are drastically different from today's desert conditions in northern Mali [...] these pluvials not only created lakes and [sediments] in the Sahara desert, they were periods when the groundwater reserves that underlie the Sahara today were replenished. This means that the aquifers beneath the Sahara were recharged during the pluvials" (*ibid.*). At Erg Jmeya, Erg Assdrem, and Foum et Alba in the Malian Sahara, Neolithic industries (dated 5500-4000 bp) have been recovered. All these finds, especially the large pots, can be taken as evidence for adopting a sedentary way of life (Petit-Maire 1983: 114- 7). From *ca.* 4000 bp agricultural activities along the southern margins of the Sahara can also be confirmed (MacDonald 2000).

IV.1.2.4.4 Figurines:

An equestrian terracotta figurine associated with an ash pit has been recovered by K. C. MacDonald, R. H. MacDonald and T. Togola at the tell site of Tongo Maare Diabal (Mali). Radiocarbon date obtained from the charcoal is AD 820- 1020 (MacDonald & MacDonald 2000: 140).

A terracotta cattle figurine dated to *c.* AD 1150 has been discovered at Daima III site in northern Nigeria (Connah 1981). The importance of this terracotta figurine lies in the fact that it is the only one representing humped cattle to be recovered from an archaeological site in West Africa so far.

IV.1.2.4.5 Rock Drawings associated with burials:

Colonel Lihoreau discovered rock drawings of domestic animals in tumuli in the Moroccan Sahara, near Torha. The first drawings found at Torba in oued Guir consists of horse paintings on flagstones. The bones of human skeletons which were associated with these paintings gave three different dates: 2230 ± 60 bp from the tomb 19; 1760 ± 60 bp from tomb 28; and 1700 ± 60 bp from tomb 27. The other drawings were found on blocks of stone near by a tumulus at Iwelen in the Air Mountains. The drawings consist of a number of engravings one of which depicts a rhinoceros with associated human bones dating to 2675 ± 200 bp (Paris 2000: 122- 3). The bones could of course post-date the curated rock paintings.

IV.1.2.4.6 Human Remains:

Human skeletal remains dated to 2850 ± 100 bp, 3600 ± 180 bp, and 4520 ± 110 bp were found in association with the lake deposits at sites AZ 20 and 21 in addition to elaborate necropolises consisting of tumuli at the sites AZ 15, AZ 42 and AZ 56 in Erg Ine Sakane and Tagnout-Chaggeret (Mali). These dates, consequently, correspond with the second, late Holocene, lacustrine phase. Moreover, the late date (*i.e.* 2850 ± 100 bp) implies that "the area had not been deserted by 3000 bp" (Petit-Maire *et al.* 1983: 109). This made Petite-Maire and others (*ibid.*) conclude that "favourable conditions still existed near the Tilemsi [valley] some 1000 years later than in the now

hyperarid area of Sakane and Chaggeret". Human burials associated with cattle remains dated to the late Neolithic (4000- 3500 bp) have been found beneath the Tigidit cliff south of Agadez in the Afunfun area (Paris 2000: 122).

One, then, may ask what are the archaeological implications for environmental reconstruction with rock art? The archaeological evidence seems to be of a significant importance in evaluating more accurately and explicitly Saharan palaeoenvironment as reconstructed by using rock art. The archaeological finds presented above (*i.e.* fireplaces, tethering stones, stone tools, pottery, bone artefact, figurine, rock drawings associated with burials, and human remains) are correlated with aspects of climatic changes and environmental conditions; they suggest that periods with relatively high humidity occurred in the Sahara during the Holocene. If such finds are found in definite association with rock art or if they were depicted as rock art subjects, then they should prove useful in establishing a sequence for the represented images and complement the reconstruction of Saharan palaeoenvironments using rock drawings.

IV.2 A Critique of the use of rock art in reconstructing Saharan palaeoenvironment:

I will discuss in this sub-section to what extent the evidence represented above brings into light controversial cases for the classifications and palaeoenvironmental reconstruction suggested by early Saharan archaeologists depending on rock art images.

Generally speaking, paintings and engravings of Saharan rock art represent Large Wild Fauna (*e.g.* extinct giant buffalo, elephant, giraffe, rhinoceros, hippopotamus, and deer), domestic bovids (*e.g.* cattle, goat and sheep) as well as dogs, equids and camels. One may suggest that the animals depicted may be taken as palaeoclimatic indicators (see above). However, as others may claim, the information obtained from the analysis of rock art images such as those of zoomorphs is purely circumstantial in the sense that these zoomorphs are derived not from 'material reality' but from 'the artistic mind". Therefore, the following discussion compares and contrasts these possibilities: arguing for and against the utility of late Holocene palaeoenvironmental information obtained from Saharan rock art subjects.

IV.2.1 Evidence for Holocene environmental reconstruction based on Saharan rock art:

First:

Ecologically, the argument for Saharan rock art classifications rests on the fact that the climatic fluctuations which occurred during the Holocene were responsible for significant changes in hydrolic systems and vegetative cover, and consequently of fauna. Hence, dividing Saharan rock art into four successive animal groups reflects in a general way the progression of climatic and environmental change during the Holocene. According to this view, the use of Saharan rock art images (mainly zoomorphs) in reconstructing the environmental change during the Holocene proceeds from the depictions of Large Wild Fauna as indicators of the most humid period; the representations of domestic cattle as indicators of a more populated steppic period; with the drawings of horses and chariots indicating a semi-arid period; and pictures of camels as indicators of a hyperarid period. The above scheme seems to coincide with general conclusions drawn from other research:

> [...] the early and middle Holocene periods were wetter than the present. Aridity began to set in by 4500 bp and was complete by 3000 bp. During the moist and wet period interannual variability was great. In addition, episodes of droughts and hyperaridity that spanned decades or a few centuries had devastating effects on water, vegetation, and the distribution, quality, and biomass of game animals.
>
> (Hassan 2000: 80)

Second:

The general outline of Saharan rock art classifications could be acceptable since "The limiting resource at all times was water" (McIntosh & McIntosh 1988: 100). This will be understood if one takes into consideration that the key point of Saharan research always concerns water. In their research on the Sahara in northern Mali, Petite-Maire *et al.* (1983: 106), for instance, wrote: "In these hyperarid regions, since human life is always closely associated with the presence of water, the search for lacustrine deposits is the logical first step in the plan of research". The same could be easily detected in these successive groups proposed by early Saharan archaeologists. The

main key here was also water. They started with the Large Wild Fauna, which usually live under wetter conditions, and ended by the camel, which is able to live without water for a long period of time. According to this concept, and in the absence of the recent knowledge, it was common to use rock art by this way to reconstruct past water availability in the Sahara.

Third:

Crucially, one may be able to draw conclusions about abiotic/biotic factors based on Saharan rock art images themselves. The animals depicted in these paintings and engravings reflect, either in a direct or indirect way, biotic factors (*i.e.* the type of vegetative cover required for such fauna). The represented animals also indicate to some degree the abiotic factors (*i.e.* rocks, type of soils, watering and climatic conditions). As a consequence, Saharan rock art images, as an aspect of human activities, provide micro-regional biological data. Following what early Saharan rock art researchers did, one may believe that rock art images can be taken as indicators of regional environmental change in the Sahara during the Holocene. An example of this can be taken from what Muzzolini (1995b) wrote:

> Around 5250 bp, rock art sites such as Mathendous, contemporary with the Neolithic Wet Phase, were associated lakes 5-10 m above the level of the present wadi bottoms, allowing crocodiles and hippopotami to live there, and explaining their portrayal on rock surfaces.
>
> (Muzzolini 1995b: 231)

Fourth:

Although the domestic dog, for example, is known from Chin Tafidet in Niger by the early second millennium BC (Paris 1992), it is as yet un-recorded at such an early date from Mauritania (MacDonald and MacDonald 2000). Based solely on rock art images associating cattle with dog in Mauritania one can therefore infer that the domestic dog in West Africa may have occurred at a date much earlier than the so-far discovered bone remains. Hence, rock art can play a unique role as an indicator in reconstructing the past, a role which is particularly prominent especially in the absence of other evidence.

Fifth:

In the absence or scarcity of bone remains of particular animal species (*esp.* giraffes, horses) and archaeological evidence (*esp.* chariot remains), some can claim that in our study of some aspects of the Holocene environment we may rely upon depictions alone. In this regard McIntosh & McIntosh (1988: 124), for instance, wrote: "The large corpus of Saharan [...] rock art depicting horses, either hitched to chariots or mounted, is all that is currently available for interpreting the history of the horse in [the Sahara]".

Sixth:

One may observe that other evidence also does not offer us a definite sequence which evaluates with certainty the palaeozoogeography of the Sahara. Many dates attributed to fauna in the Saharan sites need to be re-examined. In this regard, Hassan (2000: 81) relates: "Unfortunately, many sites are dated by one or two radiocarbon dates, some with large standard deviation. The status of some cattle bones [for example] in several cases also remains inconclusive". In their discussion on the nature of fish record in Ancient Egypt, Brewer and Friedman (1989: 1) also wrote: "Interpretation of [skeletal remains of fish] is not [...] without problems. Different survival of the delicate bones of certain fish can potentially bias the archaeological record, leading to inaccurate assessments of the type of fish captured and their relative abundance".

IV.2.2 Evidence against Holocene environmental reconstruction based on Saharan rock art:

The evidence presented in the previous sub-section may allow one to argue that the analysis of rock art images is crucial for understanding Saharan palaeoenvironments. However, it is also possible to give important arguments against such a usage of Saharan rock art.

First:

According to previous work (see sections II and III, this chapter, and also sections II and III.2, Chapter 1), it is assumed that rock art images of the Sahara represent four chronologically successive phases. However, the depicted animals at many rock art sites throughout the Sahara sometimes do not show stylistic or technical changes linked with faunal change.

Second:

It has been uniformly attested that the transition to desertic conditions in the Saharan zone was not a one-off event; instead, there were successive alternations between wet and dry phases as sedimentological and palynological evidence indicate. This contradicts the notion that rock art can be interpreted as a set of simple stadial faunal transitions from wet to gradually drier environments. Such schemes are misleading in light of the fact that the obtained picture does not take into consideration the differences in local and regional conditions in this vast zone. In the southern margin of the Sahara, for example, and during the period from 7000 to 4000 BP there were "numerous minor or local positive oscillations in hydrological conditions degradation, which led to a mosaic-like pattern" (Lézine and Casanova 1989: 49). Consequently, it would be an oversimplification if we generalise the conclusions drawn by rock art classifications and give a homogenous outline to Saharan palaeonvironmental change during the Holocene.

Third:

It seems that the capacity of vegetation and fauna to resist the dry conditions is little appreciated by rock art researchers (see Vernet 2002: 49). According to the classifications of early Saharan rock art researchers elephant representations, for example, are placed only within the most ancient group or *Bubaline* phase which includes Large Wild Fauna. However, based on careful analysis followed by biochemical tests of an unexpected find of a fragmentary elephant skull in the Holocene deposits of Nabta Playa in the Western Egyptian Desert, in addition to

fragments of two other elephant fossils found at a Neolithic site in the Bir Kiseiba region and the Jebel Uweinat, Gautier *et al.* (1994) relate:

> We should not associate fossil elephants in the Holocene Sahara with lush prehistoric landscapes, as sometimes happens because of our vague notions about the ecological requirements of this pachyderm. [...] taphonomic and collecting biases, along with the underestimation of the ecological tolerance of elephants, tend to make us overrate their significance as palaeoecological indicators, albeit in an implicit way.
>
> (Gautier *et al.* 1994: 8)

Placing elephant representations of the Saharan rock art only in the earliest group seems to contradict not only with the aspects of the Holocene climate but also with the animal behaviour itself: "elephants show a marked ecological tolerance and found in much diverse biotopes [...] they can feed on various levels of vegetation, from ground cover and shrubs to trees up to five meters above the ground [...] their diet is one of the most inclusive possible in any habitat" (Gautier *et al.* 1994: 15). Since their food includes grass, leaves, bark, and branches (Guggisberg 1963: 6) elephants are able to roam forests and plains as well as arid habitats:

> Recently it has been established that marked ecological tolerance of elephants allows some populations to live permanently in such very arid regions as the northern Namib Desert. [...] In the hot dry seasons, elephant generally concentrate along the river oases [...] Moreover, the animals can go without drinking for four days allowing travel over considerable distances between areas of forage and water-holes, especially in the dry season [...] In fact, these desert-dwelling pachyderms have survived periods of drought, where other desert-adapted herbivores such as the gemsbok (*Oryx gazella*) and the springbok (*Antidorcas marsupialis*) have died from the lack of available food in the vicinity of the remaining water-holes. It is conceivable that elephant population dwelling in the Holocene Sahara acquired adaptations similar to those of their southern extant cousins. Thus they could survive in the area with limited or almost no rain-fall and along major rivers or wadis receiving and storing water from catchment basins at higher altitudes with more but still limited precipitation
>
> (Gautier *et al.* 1994: 16)

Given this, one may be able to explain why, in some cases, elephant representations are executed side by side with depictions of other domestic animals (*e.g.* cattle) on the same rock, and why both of them have the same degree of patination. Furthermore, "Several finds and the parietal record suggest [elephants] were still around in the

fourth millennium and perhaps the third before our era" and "the extinction of elephants in [the Maghreb was only] in the early first millennium of our era" (Gautier *et al.* 1994: 16). Therefore, the represented pachyderms may imply that elephants fitted into both semi-arid and arid environments of the Sahara in quite late Holocene times and were not restricted only to the humid environment of the early and mid Holocene. Accordingly, there is no reason to attribute the representations of elephant in the Saharan rock art, as most rock art researchers do, to only one time phase/artistic group (*i.e. Bubaline* phase or ancient group). Moreover, the considerable number of these pachyderms represented in rock art of the Sahara does not necessarily refer to a forest environment or savanna catchment. It is not surprising, then, that placing all depicted elephants among the most ancient group and considering them as indicators of forest or savanna environment contradicts with the results obtained from the archaeological and palaeozoological evidence or even with recent zoological observations. It seems risky, therefore, to completely rely upon animal representations by placing them in only one environmental group.

Fourth:

Classifications of Saharan rock art have placed horse depictions in the first millennium BC, if not earlier. For instance, Mauny (1954) and Lhote (1961) dated them to the period between 1200 BC and AD 300. The reason for this as MacDonald and MacDonald (2000: 139) wrote is that: "It has been presumed that the horse and the ass became the dominant means of transport in the Sahara and in the Sahel at this time [the first millennium BC] and remained so until the introduction of the camel in the first millennium AD".

However, it is difficult to rely upon inferred dates for rock art for a number of reasons. First and most importantly, the above dates derive from unreliable methods of dating. The given approximate dates resulted from attempts to associate rock art images with the finds that have no direct relation with them. Second, recent osteological evidence found at the Saharan sites shows that the oldest equid remains are dating to a far later date than that proposed by Saharan rock art researchers. In this regard, MacDonald & MacDonald (*ibid.* 139) refer to "the complete absence of reliable osteological evidence for equids from before the first millennium AD".

Finally, it is also difficult to depend on chariot depictions in the western portion of the Sahara to establish a relative chronology for horse representations reported there. Contrary to chariot depictions of the Central Sahara, those found at the Mauritanian Sahara (*e.g.* in Bled Itini, Tondia, Aguentour El Abiod, El Beyyed and El Rhallaouiya: see Mauny 1954, 1970a; Lhote1982; Vernet 1996) are very schematic and sometimes seem to be accompanied by oxen rather than horses. Moreover, the greatest number of these very schematic chariot depictions is not accompanied with any animal (see, for instance, Monod 1937, 1938, and 1951). These schematic depictions of chariots are controversial, as one may claim, in the sense that they do not depict real carts but rather they are imitations of the artistic tradition observed in neighbouring areas or even in other distant parts of the Sahara. While Lhote (1982: 208) claims that all these chariots belong to the Caballine period even if they are accompanied by cattle, Grébénart (1988: 92) regards these "symbolic" chariots figuratively represented, as they only existed in remote regions.

Fifth:

One of the most important problems raised by the early researchers of Saharan rock art is whether the central Sahara had been a centre of cattle domestication or not. (*cf.* Vaufrey 1938).

If we accepted that "the domestication of African cattle emerged [...] within communities associated with desert lakes during the early Holocene" around 9000 bp (Hassan 2000: 66), then domestic cattle depictions date far earlier than suggested by the early Saharan rock art researchers (such as Monod, Mauny and Lhote). The time for a "cattle free" *Bubaline* hunting Period is telescoped considerably to only *c.*12-9 kyr, with cattle from 9 kyr onwards.

IV.2.3 Conclusions:

Given the foregoing, I conclude that we cannot exclude the use of rock art from any attempt to reconstruct Saharan palaeoenvironment. At the same time, we cannot use it as an independent line of evidence.

The dating question is essential in the reconstruction of palaeoenvironments *ipso facto*. . Accordingly, it seems difficult in this case to use rock art alone in reconstructing past-Saharan environment since it is not independently datable. Moreover, we have to bear in mind that artists may have depicted animals already extinct in their environment (*i.e.* imitation of existing artistic tradition). Not only that but also it so happens that depictions of animals attributed by rock art researchers to a certain climatic period are not so as environmentally diagnostic as they believe, as recent zoological observations demonstrate.

However, we cannot ignore the importance of rock art in reconstructing Saharan palaeoenvironment. It can reveal much more than other evidence and consequently provide us with valuable information in reconstructing important features of past Saharan environment. For example, no giraffe remains have been found in any of the Saharan sites and no chariot remains have been discovered so far; yet they both exist abundantly in Saharan rock art. These two examples illustrate the extent to which rock art can fill gaps in our understanding of Saharan palaeoenvironment.

Any attempt at palaeoenvironmental reconstruction depending only on rock art images can only be a rough approximation given the nature of such a task. All available evidence is vital if we are to avoid an incomplete and inaccurate picture. Consequently, data obtained from a careful analysis of these images may add to the already obtained information from other sources. By piecing together all evidence we can yield a more coherent picture of Saharan palaeoenvironment.

Given that rock art is considered dependent evidence, the conclusion I draw is that any attempt of using rock art images to reconstruct the Saharan palaeoenvironment will be successful only when supported by the securely dated information from other types of independent evidence.

V. The rock engravings of North of Atar: an environmental paradigm:

The aim of this section is to examine the zoomorphic engravings of northern Atar from the perspective of the environmental paradigm. How do they fit into the conventional environmental scheme of interpreting rock art?

As mentioned before, the engravings recorded at the two sites under invistigation are not associated with archaeological finds. Therefore, it is not possible to date them by way of association. However, using finds associated with rock art sites can sometimes be misleading as we mentioned before (see, for instance, section II, this chapter).

Using the recorded data to establish a local sequence of environmental change in northern Atar region, thus, requires grouping the represented fauna into classes of the same age as attested by similar patina, cases of superimposition, analogous techniques and style. The classes constituted in this way are, then, given a sequence in relative chronology that may enable us to reconstruct the history of fauna and, consequently, deduce something about the environmental changes that occurred in the area under investigation (see Muzzolini 2000). At the same time, we have to remember that this exercise may show problems with the environmental paradigm. In such a case, we will examine the problems resulting from this approach.

V.1 Foum Chor site:

After a careful description given in the previous chapter, the zoomorphic engravings recorded at Foum Chor site have been identified as follows: cattle (large bovids), antelope, dog, hyaena, equid (probably donkey), and camel. In addition to this category, we can also find carnivore, ibex (?) and gazelle (?).

If we only consider the characteristic animals, as early researchers of Saharan rock art did, the obtained sequence of the represented zoomorphs of Foum Chor site is of course wild fauna to cattle to equid to camel. But is this really the case if we follow the other criteria which include patination, superimposition, technique and style?

V.1.1 Patinas and superimpositions:

Keeping in mind what has been already said above, establishing a sequence must be aided by comparative patinas and cases of superimposition (were possible). According to the degree of patination the represented animals can be classified as follows:

a. Dark patinated engravings: this category includes all depicted bovids (Figs. 53a: 1, 2, 3, 4, 5, 6, 7 and 9) in addition to incomplete qudrabed (Fig. 53a.8).
b. Medium patinated engravings: this category consists of a camel (Fig. 53a.11), an ibex? (Fig. 53a.12), an antelope (Fig.53a.13), one carnivore (Fig. 53a.14), one gazelle? (Fig. 53a.15), one equid (Fig. 53a.16) and one dog (Fig. 53a.17).
c. Light patinated engravings: this category includes one equid (53a.10), and one hyaena (53a.18).

From the above classification which follows patina the sequence that one can obtain for the represented fauna of Foum Chor is 'cattle' to 'wild fauna-equid-camel' to 'equid-hyaena'. Since patina places cattle before wild animals, and sometimes camel before equid at Foum Chor site one is easily caught in a paradox that clearly illustrates the weakness of the environmental approach.

As to the cases of superimpositions among the dark patinated engravings (*i.e.* cattle representations) we can find the following:

Figure no.	Superimposed by figure no.
53a.1: Pecked (outlined) hornless bovid of large size.	53a.3: Pecked (outlined) hornless bovid of large size.
53a.2: Pecked (outlined) hornless bovid of large size.	53a.3: Pecked (outlined) hornless bovid of large size. 53a.4: Pecked (outlined) bovid of large size with C-like long horns. 53a.8: Incomplete pecked (outlined) quadruped (?) of large size.
53a.5: Pecked (outlined) bovid of large size (thin pecked outline: partly rubbed to form a smooth or polished groove), with C-like long horns.	53a.6: Pecked (outlined) bovid of small size with partly pecked body and lyre-shaped long horns.
53a.8: Incomplete pecked (outlined) quadruped (?) of large size.	53a.7: Pecked (outlined) bovid of small size with partly pecked body and lyre-shaped long horns.

(Table 5)

Cases of superimpositions among cattle representations

What needs to be emphasised in this regard is that the two pecked (outlined) cattle of large size (Figs53a.3 and 53a.4) are not superimposed one another. Rather, they seem to constitute one scene, where the back leg of the first bovid is connected with the front leg of the second.

Fortunately, for the sake of our patination argument, two of these dark patinated cattle engravings are superimposed by other animal engravings. These significant cases of superimposition can be presented as follows:

Figure no.	Superimposed by figure no.
53a.6: Darkly patinated pecked (outlined) bovid of small size with partly pecked body and lyre-shaped long horns.	53a.18: Lightly patinated pecked then heavily abraded hyaena.
53a.9: Incomplete darkly patinated pecked (outlined) bovid with U-like long horns.	53a.10: Lightly patinated pecked then heavily abraded equid. 53a.11: Pecked and then partly abraded camel with medium patination.

(Table 6)

Cases of superimposition among cattle depictions and other represented zoomorphs

As to the other cases of superimposition among the represented fauna, one can barely distinguish the following:

Figure no.	Superimposed by figure no.
53a.12: Fully pecked ibex (?) with medium patination.	53a.13: Fully pecked antelope with medium patination.
53a.13: Fully pecked antelope with medium patination.	53a.15: Fully pecked gazelle (?) with medium patination.
53a.14: Fully pecked carnivore with medium patination.	53a.13: Fully pecked antelope with medium patination.

(Table 7)

Cases of superimposition among zoomorphic figures

Taking into account the above cases of superimposition, the obtained sequence of depicted domestic animals at Foum Chor must be 'cattle' to 'wild fauna-equid-camel' to 'equid'. In one case, camel precedes equid since the engraving of the former (Fig. 53a.11) has medium patination while the latter (Fig. 53a.10) is lightly patinated. One may disagree and claim that equids must be placed at least with, if not before, the camel since there is an equid engraving (Fig. 53a.16) has the same medium patination as camel and is also executed by the same style and technique (see below). However,

we have to exclude such a claim since we prioritise here the direct relations between the represented animals themselves as attested by the definite cases of superimposition.

V.1.2 Analogous techniques and styles:

A number of researchers (*cf.* Alimen 1957, Lhote 1960, McBurney 1960, Mori 1998) have been discussing the possible relation between different styles of rock art and environmental changes that accrued in the Sahara during the Holocene (to say, for example, that a naturalistic art group is connected with a region that was once savanna, a semi-naturalistic art group with a steppe environment, or that a schematic art group indicates a semi-desert or desert environment). However changing style does not necessarily imply changing environmental conditions. More than one style could be presented at the same period by the engravers or painters of one 'school' of art. Similarly, the artists could employ different techniques during the same period.

The following table shows the similarities and dissimilarities in style and technique of the eighteen engraved zoomorphs of Foum Chor site:

Figure no.	**Depicted animal**	**Style**	**Technique**
53 a.1	Bovid (eroded)	Semi-naturalistic	Pecking: (pecked outline)
53a.2	Bovid (eroded)	Semi-naturalistic	Pecking: (pecked outline)
53a.3	Bovid	Semi-naturalistic	Pecking: (thick, pecked outline)
53a.4	Bovid	Semi-naturalistic	Pecking: (thick, pecked outline)
53a.5	Bovid	Semi-naturalistic	Pecking: (thin, pecked outline: partly rubbed to form a relatively smooth or polished groove)

53a.6	Bovid	Semi-naturalistic	Pecking: (pecked outline and pecked body except for a square on the hip)
53a.7	Bovid	Semi-naturalistic	Pecking. (pecked outline and pecked body except for a square on the hip)
53a.8	Incomplete quadruped: only backlines)	?	Pecking (pecked outline)
53a.9	Bovid (incomplete)	Semi-naturalistic	Pecking (pecked outline)
53a.10	Equid (donkey)	a tendency to realism or naturalism	Pecking and abrasion.
53a.11	Camel	Schematic	Pecking and abrasion (U technique)
53a.12	Ibex (?)	Schematic	Pecking (U technique): (Fully pecked)
53a.13	Antelope	Schematic	Pecking: (Fully pecked)
53a.14	Carnivore	Schematic	Pecking (U technique): (Fully pecked)
53a.15	Gazelle (?)	Schematic	Pecking (U technique) (Fully pecked)
53a.16	Equid (donkey)	Schematic	Pecking and abrasion (U technique)
53a.17	Canid (dog)	Schematic	Pecking and scratching
53a.18	Hyaena	Schematic	Pecking and abrasion (U technique)

(Table 8)

Similarities and dissimilarities in style and techniques of the engraved animals of Foum Chor site

The above mentioned table makes it possible to suggest two main sequences for the represented fauna; the first is based on the style while the second is derived from the technique employed. Do these sequences coincide with each other or they demonstrate major differences that make the environmental reconstruction complicated and obscure?

As to the style present, it is pssible to place the depicted animals in the following classes:

a) Animal engravings of semi-naturalistic style: this class includes all bovid representations.
b) Animal engravings show a tendency to realism or naturalism: this class consists of one equid (Fig. 53a.11).
c) Animal engravings of schematic style: this class includes one camel (Fig. 53a.11), one equid (Fig. 53a.16), one canid (Fig. 53a.17), in addition to five engravings of wild animals (Figs. 53a: 12, 13, 14, 15 and 18).

According to the above classification, the obtained sequence must be 'cattle' to 'equid' to 'equid-camel-wild animals-domestic dog'. One may agree that the presence of equid representations in two successive classes does not interrupt this sequence. Interestingly, Monod (1938) Alimen (1957) Lhote (1961) and Willcox (1984) stated that the representations of both animals (equid and camel) appeared and coexisted side by side. However, the most important problem that confronts such a sequence is that the equid placed in the second class -which shows a tendency to realism or naturalism- has light patination while that of the third class has medium patination and is depicted in schematic style. The same can be said if we compare the equid of the second class with the rest of the represented animals of the third class (except for the hyaena which has light patination but is executed in the schematic style: Fig 53a.18). According to the notion of evolution of style, it is unlikely to place the equid of the second class (Fig. 53a.11), which has light patination, after the schematic, medium patinated animal engravings.

If we consider the technique of execution the represented animals can be classified into the classes:

a. Pecked outlined engravings: they include five cattle (Figs 53a: 1, 2, 3, 4 and 7) in addition to an incomplete quadruped (Fig. 53a.8).
b. Pecked outlined engravings partly rubbed to form a relatively smooth or polished groove: this class includes only one bovid (Fig. 53a.5).
c. Pecked outlined engravings with partly pecked body: this class is represented by two cattle (Figs. 53a: 6 and 7).
d. Fully pecked engravings: four wild animals constitute this class (Figs. 53a: 12, 13, 14 and 15).
e. Fully pecked-abraded engravings: this class also comprises four animals: two equids (Fig.53a: 10 and 16), one dromedary (Fig. 53a.11) and a hyaena (Fig. 53a.18).
f. Pecked and scratching engravings: only one canid (Fig. 53a.17) is included in this class.

The most important observation that may lead us to reach an acceptable sequence is that all represented animals are chiefly done by using a pecking technique. Hence, our attempt to establish a sequence should be directed to the other technical differences that may lead to a better distinction between the represented animals. This can be done by reducing the six classes given above to three:

a) Animals presented in engraved outline only: this class includes six cattle (Figs. 53a: 1, 2, 3, 4, 5 and 9) in addition to an incomplete quadruped (Fig. 53a.8).
b) Animals presented in engraved outline and partly engraved body: this class include two cattle (Figs. 53a: 6 and 7).
c) Fully engraved animals: this class includes nine animals: two equids (Figs. 53a: 10 and 16), one camel (Fig. 53a.11), one dog (Fig. 53a.17) and five wild animals (Figs. 53a: 12, 13, 14, 15 and 18).

In this fashion, and taking into consideration the cases of superimposition, the obtained sequence is: 'outlined animal engravings' to 'partly engraved animals executed in outline' to 'fully engraved animals'. In other words, the sequence of the represented animals is 'cattle' to 'wild animals-camel-equids-domestic dog'.

From all the above, the obtained sequences of the represented animals at Foum Chor site can be summarised as follows:

Criterion	Obtained Sequence
Patina	'cattle' to 'wild animals-camel-equid-domestic dog'
Superimposition	'cattle' to 'wild animals-equid-camel' to 'equid'
Style	'cattle' to 'equid' to 'equid-camel-wild animals-domestic dog'
Technique	'cattle' to 'wild animals-camel-equids-domestic dog'

(Table 9)

Sequences of the represented animals at Foum Chor

All the obtained sequences place cattle before other represented animals. Except for the sequence obtained from the style of the depicted animals, all sequences place camel and equids in the same class.

V.2 Ahel-Ebdemmed Site:

The same method used in establishing a sequence for the engravings of Foum Chor is also employed here.

V.2.1 Patinas and superimposition:

By the study of comparative patination it could be possible to determine which of other animal engravings were of about the same age. According to the patina, the represented fauna of Ahel-Ebdemmed site can be classified in the following classes:

a. dark patinated engravings:

This category includes three animals: two horses (Figs. 97a: 2 and 3) and one canid or possible jackal (Fig. 97a.1).

b. muddled or mixed patinated engravings (dark/medium):

This category includes two animals: one horse (Fig. 97a. 4) and one domestic dog (Fig. 97a.19).

c. medium patinated engravings:

This category comprises twelve animals: eleven horses (Figs. 97a: 6, 7, 8, 9, 10, 13, 14, 21, 22, 23, 24 and 25) and one donkey (Fig. 97a.12).

d. muddled or mixed patinated engravings (medium/light):

This category covers two horses (Figs. 79a: 13 and 20)

e. light patinated engravings:

This category includes one horse (Fig. 97a: 5) and one donkey (Fig. 97a.18).

f. unpatinated engravings:

This category consists of three horses (Figs. 97a: 15, 16 and 17).

Compared to Foum Chor site, establishing a sequence for the represented fauna relying upon patina seems more difficult and possibly ambiguous.

The variety of depicted animals at Ahel-Ebdemmed site is not great: only equids (twenty horses and two donkeys) and canids (possible jackal and one domestic dog). The dissimilarities of style and techniques are also minimized to the extreme (see below). Accordingly, the great similarity of the represented fauna (as attested by the few characteristic animals, the form, the style and technique), allows one to assert that all of the depicted zoomorphs belong to the same period, even though they greatly differ in patina.

If we consider patina we may reach a completely different sequence which contradicts our other criteria. The horse engravings differ greatly in their patination. They show six degrees of patination: dark, dark/medium, medium, medium/light, light, and unpatinated. One may believe on this basis that these depicted horses represent six successive sub-periods. This is not true in the light of the fact that two of the first three horses of the first group (Figs. 97a: 2, 3 and 4), all of which have the same form, technique and style, are darkly patinated while the third (Fig. 97a.4) has the same degree of patination except for the head, neck, hip, tail and back legs which are covered with medium patination. The patina of the latter horse lead me to expect that the other two dark patinated horses of this group will be patinated by the same way in the short or even the long-term. Noteworthy is that half of the represented equids have this medium patination (see above). The existence of unpatinated horses (the three of the fourth group) makes the situation more problematic especially if we take into consideration that they have the same artistic qualities of the three horses of the first

group mentioned above. Why are they not patinated? Were they executed in a very recent times or contemporaneous with other depicted horses? It is difficult to know. There is a similar situation if we attempt to use patina to place other represented animals (*i.e.* donkeys and canids) in a relative sequence. As to canid representations, there are two each of which belongs to different group and has different form compared to the other: one possible jackal with dark patination is placed in the first group (Fig. 97a.1) while the other represents a domestic dog with muddle (dark/medium) patination (Fig. 97a.19). Two donkeys are represented: one with medium patination (Fig. 97a.12) while the other is lightly patinated (Fig. 97a.18).

From the above, it is clear that the patina of the engraved animals of this site is badly affected by differential weathering factors and local conditions of the rock. This is evident by a number of facts. First, large boulders conceal a part of the engraved surface of the site (Figs. 81, 82, 83, 89, 90, 91, 92, 93, 94, 96 and 100). These boulders probably prevent the engravings of the first and second groups from being exposed to the light and other weathering conditions to which the engravings of other group are exposed. Second, contrary to the engraved surface of Foum Chor, the rock art of this site is executed on an irregular surface (Figs. 90, 91, 92, 93, 94, 96, 98, 99, 100, 102, 105, 106, 107, 110, 111, 112 and 114). This can produce different degrees of patination, even if the engraved animals are of the same age. Third, it is clear that some areas of the engraved surface are more heavily washed or coloured by the dripping water than other areas. This phenomenon can be clearly discerned through a careful investigation of the engraved area that comprises the first two artistic groups (see Figs. 92, 98, 99, 101 and 107). The dripping water in this case seems to split the colour of the rock surface and, consequently, the patination of the engraved animals. As a result, the engravings of the first group show three types of patination: dark, muddle (dark/medium) and light patination, while all the engravings of the second group share the same medium patination because all of them are placed on the washed half of the rock surface. One of the most important observations regarding the affects of such weathering conditions is that the dark patina of some engravings has been changed to either a muddled (dark/medium) or medium patina.

From the above, I may rightly conclude that patina does not allow one to establish a precise or reliable sequence for the fauna represented at Ahel-Ebdemmed site.

However, one can tentatively suggest a sequence from 'horse' to 'donkey' since there are no dark patinated engravings for the latter; one of the two represented donkeys (Fig. 97a.12) has medium patination while the other (Fig. 97a.18) is lightly patinated.

Given that the cases of superimposition are completely absent among the represented animals at Ahel-Ebdemmed site (see Fig. 97a), it is impossible to place them in a sequence depending on this criterion.

V.2.2 Analogous techniques and styles:

The following table summarises the similarities and dissimilarities of styles and techniques used in executing the twenty-four identified animals of Ahel-Ebdemmed site:

Figure no.	**Depicted animal**	**Style**	**Technique**
97a.1	Canid (possible jackal)	Stylised	Pecked then deeply abraded or rubbed forming a very smooth or polished groove
97a.2	Horse	Stylised	Pecked then deeply abraded or abraded forming a very smooth or polished groove
97a.3	Horse	Stylised	Pecked then deeply abraded or rubbed forming a very smooth or polished groove
97a.4	Horse	Stylised	Pecked then deeply abraded or rubbed forming a very smooth or polished groove
97a.5	Horse	Stylised	Pecked then abraded
97a.6	Horse	Stylised	Pecked then abraded
97a.7	Horse	Stylised	Pecked then deeply abraded or rubbed forming a relatively deep smooth or polished groove

97a.8	Horse	Stylised	Pecked then abraded
97a.9	Horse	Stylised	Pecked then abraded
97a.10	Horse	Stylised	Pecked then abraded
97a.12	Donkey	Stylised	Pecked then abraded
97a.13	Horse	Schematic	Pecked then abraded
97a.14	Horse	Schematic	Pecked then abraded
97a.15	Horse	Stylised	Pecked then deeply abraded
97a.16	Horse	Stylised	Pecked then deeply abraded
97a.17	Horse	Stylised	Pecked then deeply abraded
97a.18	Donkey	Stylised	Pecked then deeply, but partly, abraded
97a.19	Canid (possible dog)	Schematic	Pecked then abraded
97a.20	Horse	Schematic	Pecked then abraded
97a.21	Horse	Stylised	Pecked then abraded
97a.22	Horse	Stylised	Pecked then deeply, but partly, abraded
97a.23	Horse	Stylised	Pecked then abraded
97a.24	Horse	Stylised	Pecked then abraded
97a.25	Horse	Stylised	Pecked then abraded

(Table 10)

Similarities and dissimilarities of styles and techniques used in executing the identified animals of Ahel-Ebdemmed site

The tiny differences in the technique of the represented animals as the above table shows play an insignificant role in establishing a sequence. First, all the represented animal species are pecked and then abraded. Second, we can discern horses (Figs. 97a: 2, 3, 4, 7, 22), donkeys (Fig. 97a.18) and canids (Fig. 97a.18) pecked and then either fully or partly deeply abraded. However, since none of the two represented donkeys is rubbed to form a very smooth or polished groove, I suggest an older date for horse representations of the first group (*i.e.* Figs. 97a: 2, 3 and 4). This can be supported once again by the dark patination that these horses have.

As to the style of the represented animals, we note from the table represented above that horse representations are either stylised (Figs. 97a: 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 21, 22, 23, 24 and 25) or schematic (Figs. 97a: 13, 14 and 20) while those of donkeys are only stylised (Figs. 97a: 12 and 18). If one accepts the notion of the evolution of style (see above) then it is possible to assume that donkey representations are contemporaneous with those of stylistic horses, while they precede those horses depicted in schematic style. However, it seems difficult to apply such a notion as a number of horses, which have the same degree of patination, are executed in different styles (compare, for instance, Figs. 97a: 8 and 14). Canid representations are also executed either in stylistic (Figs 97a: 1) or schematic (Fig. 97a.19) style. Accordingly, style alone does not seem to aid us in establishing an apt sequence of the represented animal species at Ahel-Ebdemmed site.

V.3 Summary of the obtained sequences for the represented fauna of Foum Chor and Ahel-Ebdemmed Sites:

In this sub-section I summarise the sequences obtained from classifying the engravings of each site depending upon different criteria. The aim is to reach a general sequence for the depicted fauna which will constitute the corner stone of the discussion presented in the next sub-sections.

V.3.1 Summary of sequences of the fauna representations from Foum Chor:

After a glance at Table 9 above, the general sequence obtained should place cattle and only cattle as the earliest animal engraved at Foum Chor. Since cattle were never depicted schematically, we should place all other animals, which are schematically represented, in the second place within an overall sequence (camel, ibex? antelope, carnivore, gazelle?, equid: also probably donkey, and dog). Due to patina the other equid (donkey) and the hyaena should be placed in the end of the sequence. Accordingly, the overall sequence of the fauna presented at Foum Chor should be: 'cattle' to 'wild fauna-camel-equid-dog' to 'donkey-hyaena'.

Bovid engravings themselves illustrate four types of humpless cattle. These types can be chronologically ordered, as evidenced by the cases of superimposition and the technique employed, in the following sequence: 'hornless cattle' to 'C-like long horned cattle' to 'U-like long horned cattle' to 'lyre-like long horned cattle'.

Compared with other represented cattle, the C-like long horned bovid (Fig. 35a.5) is executed with deeply engraved outline, the matter that may lead one to place it the earlier. However, one may place the hornless bovids with pecked outline (Figs. 53a: 1 and 2) at the top of the proposed sequence since they have the same dark patina and are highly weathered.

V.3.2 Summary of sequences of the fauna representations from Ahel-Ebdemmed:

Criterion	The obtained sequence
Patina	Horses-canids to donkeys
Superimposition	None
Technique	Horses-canids to donkeys
Style	No variation

(Table 11)

Summary of sequences of the fauna representations from Ahel-Ebdemmed

If all the represented animals (only equids: horses and donkeys and canids: possible jackal and domestic dog) are not contemporaneous, there is a possibility that horses and canids preceded donkeys. The reason in the latter case is that neither of the two donkeys presented shows dark or even muddled (dark/medium) patina (see above).

V.4 Discussion on the possible palaeoenvironmental implications of animal depictions of Foum Chor and Ahel-Ebdemmed Sites:

According to the attempts made above to establish a sequence for the fauna represented at both sites, I discuss in this sub-section the possible palaeoenvironmental implications of animal engravings recorded at the North of Atar if read as 'purely' environmental data. In other words, there is an important question

which needs to be asked: Is it possible to take the represented fauna as indicators for processes of environmental change in this area?

V.4.1 Foum Chor Site:

In all sequences proposed above, cattle engravings are the earliest: they are of large size (compared with other depicted animals) and are represented in semi-naturalistic style, and have anever appear with medium or light patination. The environmental conditions needed for providing cattle with the basic requirements of food and water are evidenced by the results of archaeological research conducted not far from the site of Foum Chor. At Oum Arouaba, which is located 60 km north of Atar (see Map 3), significant archaeological finds have been discovered (Chamard 1972). A considerable number of lithics, pottery, and bone harpoons and human remains have been found in the deposits of this site which is dated to 5940 bp. As to the faunal remains recovered from the lake deposit, they include: domestic cattle, fish, hippopotamus, elephant, warthog, turtle, crocodile (*Lates niloticus*) and antelope. The remains of cattle, fish, and wild animals led Garcea (1993: 185-6) to suggest that both "pastoral activities" and "hunting and fishing" were practised at Oum Arouaba. Such wild fauna are not reflected in the Foum Chor rock art, perhaps indicating that they are posterior to this period. Since they never appear with medium or light patination, it seems that cattle ceased being depicted when they disappeared from the area. It is possible, therefore, to conclude that growing desiccation and overgrazing led to the replacement of cattle (the only dark patinated engravings) with semi-desert/desert, game animals such as antelope, ibex?, gazelle?, carnivore (the medium patinated engravings of schematic style). It is not surprising then to find in this sequence that cattle precede these species of wild animals.

The sequence obtained from the study of comparative patinas shows that camel (Fig. 53a.11) is contemporaneous with equid (Fig. 53a.17) with both having the same medium patination. These two engravings seem earlier than the other equid (Fig. 53a.10) which has light patination. If the two equids (Figs. 53a: 10 and 17) really represent donkeys (see Chapter 4), then this is also in line with the environmental reconstruction since the domestic ass is quite happy in Saharan conditions (Law 1980). During my fieldwork, I spotted a number of domestic asses movnig freely in

the heart of this part of the Adrar plateau which today is hyper-arid. My local guides even exploited one of domestic asses in work: for carrying loads of fire-wood they collect from the mountainous area around the *Khneg* to use it as a fuel for different purposes. The represented equids, thus, can be seen as follows: The medium patinated equid represents the domestic ass which coexisted side by side with the (medium patinated) camel, whereas the light patinated one represents the domestic ass which still exists in the area nowadays.

Desert conditions encourged the introduction of the camel. "The dromedary, or one-humped camel, is perfectly adapted to life in hot arid deserts, where it will migrate over huge areas, browsing on the sparest vegetation and surviving without water for longer than any other mammal" (Clutton-Brock 1993: 65). Accordingly, we could expect that the environment at the time the artists or camel riders depicted their dromedaries was characterised by hyperarid condition.

V.4.2 Ahel-Ebdemmed Site:

This rock art site is striking in comprising an extraordinary number of equid engravings (twenty-two equids: two asses or donkeys and twenty horses, see Chapter 4 and Fig.97.a).

Horses usually live in areas that have a slightly vegetation cover and it is difficult to imagine horses in marshy terrain. Since this site is near a palaeolake (see Chapter 4), one may imagine that the horses may have been used in carrying water from this watery spot to other more barren places. In this regard Willcox (1984: 41) states: "Strabo, about the first decade of this Era, relates that horses were still being used but travellers were obliged to carry water tied in a bag under the belly of the animal". We can also find the same notion in Mauny's (1970a) thought when he attributed the horse paintings found in Tarf-ech-Cherif cave in the Rkiz massif, Mauritania, to the existence of water resources.

V.5 General discussion on the possible palaeoenvironmental and chronological implications of North of Atar engravings:

The environmental implications of the fauna represented at the two rock art sites of northern Atar can be presented as follows:

1. The northern Atar animal engravings are relatively few in number and not at all representative of the full range of fauna which existed in the western part of the Sahara during the Holocene. For example, Large Wild Fauna are not present among the animal engravings of both sites in question. The complete absence of the depictions of the Large Wild Fauna (e.g., elephant, giraffe, rhinoceros, and hippopotamus) could signify the absence of certain habitats near Foum Chor site at the time of bovid depictions.

2. The presence of the dark patinated cattle engravings (the oldest phase) at Foum Chor seen as a consequence of wet climatic conditions that allowed a pastoral way of life. In that case, these ancient bovid engravings may ecologically imply that wet/pluvial conditions or at least lake ecosystem was well-established in the area at the time of these bovid depictions. The existence of more than one phase of cattle engravings also suggests a long pastoral period. These artistic pastoral phases, then, could be taken as indicators of the humid conditions which existed in the Sahara during the Holocene: during the Early Neolithic (5,500-3,700 B.C.), Middle Neolithic (3,700-3,400 B.C.) and Late Neolithic (until 2,000 B.C.) and led to the infiltration of cattle keepers from east to west and from north to south. This environmental reconstruction can be supported by the fact that the Neolithic covers the whole period of time of Bovidian style of the rock art of the Sahara (Brentjes1984). The rise of aridity, which led to the desertification of the steppes with ramifications for pastoral areas, may be evidenced by the fact that no medium or lightly patinated bovid engravings are present at Foum Chor.

3. Though wild animals (*i.e.* antelopes, gazelles and carnivores) would have been there all along, it is unlikely that their depictions, which are characterised by the small size and have medium patina, were contemporaneous with those of cattle. This leads us to suggest that when cattle disappeared from the area the artists turned to

schematically depict only the species which were able to live under semi-desertic and/or hyper-arid conditions.

4. Increasingly arid conditions may be evidenced by the equid engravings found in both sites and the camel depiction detected at Foum Chor. As attested by patina, style, technique and cases of superimposition, the depictions of equid (*i.e.* Fig. 53a.16) and camel (Fig.53a.11) at Foum Chor seem to be contemporaneous. This gives the indication that both animals probably co-existed in the area at the same time. Following the brief phase of humidity that occurred in the late second millennium B.C. which may have led to the introduction of domestic equids, the new conditions of hyper-aridity of the first millennium B.C. made it possible to gradually replace the domestic equids (horses) by the camel which lives side by side with other domestic equids (donkeys) (Fig.53a.10) which are quite happy in the current Saharan conditions.

V.6 Problems posed by the application of the environmental paradigm:

One may claim that such a reconstruction seems to be an uncritical application of the environmental paradigm, especially since there are examples from the Sahara that show considerable problems in the use of rock art to interpret past environments.

Ethnographic evidence shows that people in the desert are able to keep cattle even under the current Saharan conditions, and are able to adapt alternatives to support their domestic animals with the basic requirements of food and water. S. E. Smith (1980), for instance, studied the alternatives adapted by the nomadic Kel Tamasheq of southern Mali who are pastoralists with herds including camels, cattle, sheep, goats, donkeys and dogs. She described them as "traditionally 'pure' nomads, *i.e.* never sedentary" (p. 469). The three seasonal extremes (the cold, hot dry, wet seasons/periods) as well as the high temperatures (46°C in May) make their movement is the favourable and effective means to exploit widely scattered and scarce resources (pp. 468, 475). There is thus no reason to assume that changes in domestic fauna equate to environmental changes. Rather, there are also cultural or adaptive choices at work.

Another problem that we may face in our reconstruction is that if the represented animals really reflect the environmental changes that occurred in the area, then one may ask why the ancient inhabitants did not depict their other domestic animals? Today local people keep not only camels and donkeys but also goats and perhaps sheep though water resources seem to be limited and scarce in this hyper-arid area of the Mauritanian Adrar. If present-day inhabitants are able to keep goats under these harsh conditions, one then may suggest that their ancestors were able to do the same under similar if not different/better environmental conditions. In this case, rock art is not a 'total picture' of past faunal realities, but a cultural choice of what to depict. This then may lead one to claim that the northern Atar artists tended to carefully select an animal or a group of animals for their depictions; and this selection is likely due to non-ecological factors; and consequently this rock art should be seen as a matter of individual choice; and it could be suitable for studying stylistic evolution or the ideology of artists, rather than giving evidence for the actual environmental change as shown by other 'real' evidence. If this is really the case, then it becomes difficult to verify that the represented animals are independent indicators of environmental change. In the same connection, Davis (1990) wrote:

> Many writers on rock art had initially aligned themselves with empirical (and later with 'scientific') archaeology in constructing the rock picture as an 'artefact' rather than as (also) an 'image' or 'text'. The artefact was regarded as the fossil of something which really occurred, in this case, something really seen or experienced by the maker [...] As some prehistorians recognized [...] behaviour could be very complex: at least as studied in the humanities, an 'image' or 'text' [...] had to be approached cautiously, on the look-out for metaphor, satire, propaganda, fantasy, or downright *mis*representation for rhetorical, ideological, or other purpose. [...] Artists had some 'motivation' for selectively representing aspects of their environment, 'aesthetically charged' for some specific reason [...]. 'Motivation' implied an active choice of subject-matter and style, rather than the passive registration and instinctive performance attributed to prehistoric artists in earlier 'innatist' literature.
>
> (Davis 1990: 292)

However, the engravings of the northern Atar seem to indicate that the represented fauna is not exclusively non-environmental. What is represented coincides, to some degree, with the information obtained from other evidence for Saharan palaeoenvironment. If we accept that these zoomorphic representations made

reference to aspects of man's life and his different values (*e.g.* the economic, the ideological), then we would also expect that they in one way or another mirror (with distortions) the environmental and ecological conditions humans experienced.

VI Conclusion:

The conclusion must be that any attempt to reconstruct the Holocene environment in the Sahara depending only on rock art images will remain deficient as the nature of the rock art data (unless directly datable) will always be only partially representative sequences of the broader formal reality of the past. For this reason we will not be able to fulfil such a reconstruction until more lines of sedimentological, palaeobotanical, archaeozoological and archaeological evidence are obtained. Therefore, in order to validate or discard the role which paintings and engravings may play in reconstructing the Saharan palaeoenvironment we should examine the information obtained from the analysis of rock art data by comparing it with the evidence that other disciplines provide us with. In this way, using rock art as a tool of reconstructing palaeoenvironmental change can find its place alongside other evidence to achieve such a task.

The fauna of Foum Chor and Ahel-Ebdemmed do indeed appear to show a sequence. This sequence may, on the one hand, be used to argue for a sequence of environmental change. However, more regional archaeological data is needed before such a pronouncement can be made.

Chapter 6
Northern Atar engravings: a culture-historical approach

I. Introduction:

As shown in the previous chapter, the rock art of northern Atar exists in multiple styles. The study of comparative patinas, cases of superimposition and techniques also implies that the depicted motifs do not date to a single period. This leads us to one of the most important questions that need to be answered: who produced the engravings of northern Atar?

This chapter, which deals with these engravings from a culture-historical perspective, is an initial attempt to give an answer to this question and to place the recorded work within a culture historical context.

II. Culture-Historical Approach:

II.1 Background:

The culture-historical approach is "an approach to archaeological interpretation which uses the procedure of the traditional historian (including emphasis on specific circumstances elaborated with rich detail, and processes of inductive reasoning)" (Renfrew & Bahn 1996: 540). This traditional approach in archaeology emerged in the United States during what Willey and Sabloff (1980) described as the "classificatory-historical" period (1914-1960). The aim of this approach was to establish a chronological sequence of cultures and to map them (by employing cartographic methods) in an attempt to trace temporal patterns of cultural influence (Johnson 1999: 18). The separate regional sequences, resulting from a great number of studies, led some scholars of the 'classificatory-historical period' to establish the 'Midwestern Taxonomic System' which correlated sequences in Midwest -and in other areas- by identifying similarities between artefact collections (Renfrew & Bahn 1996: 34).

These classifications were not only based upon the context of the archaeological fieldwork but also on theoretical ethnology (*e.g.* the Austrian *Kulturkreislehre* School). This method was known as the 'direct-historical approach' which, according to Willey and Sabloff (1980: 108), refers to "working back into prehistoric time from the documented historical horizon".

Culture-history is regarded as the "extraction, description and classification of [variation in] material remains within a spatial and temporal framework made up of units which are usually referred to as 'cultures' and often regarded as the product of discrete social entities in the past" (Jones 1997: 5):

> [...] one of the principle assumptions underlying the culture-historical approach is that bounded, homogeneous cultural entities correlate with particular people, ethnic groups, tribes, and/or races. This assumption was based on a normative conception of culture; that within a given group cultural practises and beliefs tend to conform to prescriptive ideational norms or rules of behaviour. Such a conceptualisation of culture is based on the assumption that it is made up of a set of shared ideas or beliefs, which are maintained by regular interaction within the group, and the transmission of shared cultural norms to subsequent generations through the process of socialization, which purportedly results in a continuous cumulative cultural tradition.
>
> (Jones 1997: 24)

The culture-historical approach, then, rests on a normative view of culture, which means that culture is a template imposed upon the mind of individuals belonging to that culture. This also means that, artifacts, as seen by the traditional archaeologists, are the product of shared ideas. This normative view depends on two assumptions: artifacts are expressions of cultural norms and those norms define what culture is (Johnson 1999).

A thorough account of the major problems with this approach, as shown by non-traditional archaeologists, would be essential to grasp a better understanding of the culture-historical approach.

II.2 Major problems with the culture-historical approach:

The culture-historical approach has been heavily criticised by a number of archaeologists. Generally speaking, they believe that it is an out-moded paradigm for archaeological explanation. The following problems, which must be considered before any useful re-application of the culture historical paradigm can be made, demonstrate how and why this approach has been criticised.

One of the consequences of this approach, with its central concern of chronology, is that any prehistory of a particular area or even an entire zone seems to be divided into phases or separate periods:

> The whole synthesis thus produced tended to be descriptive. That is, it described phases and areas of cultural change: this culture followed that culture, this innovation spread or diffused at that rate. Much traditional prehistory read like much traditional history - that is like a chronicle of events held together by narrative. There was little explicit explanation of why this or that pottery style changed, why this or that culture spread or changed.
>
> (Johnson 1999: 19)

Indeed, it is difficult to divide the cultural history of a given area into successive phases since the boundaries between such phases proved to be artificial and even knotty. Therefore, it appears that traditional archaeologists tended to overrate the description of cultures. Establishing a chronology based solely upon a simple evolution or improvement in one type of archaeological remains also seems ridiculous. Such a tendency also proved to diminish the study of other important features concerning past societies and their cultures and does not explain culture process, ignoring the cognitive factors and values that stand behind the archaeological remains (see, for instance, Johnson 1999; Thomas 1999; Willey & Sabloff 1980).

Traditional archaeologists attempted to explain cultural change by diffusion: the process which is currently down-played by the majority of archaeologists. MacDonald (1998) describes such attempts by stating:

> Since the 1950s there has been a general tendency in archaeology to eschew the drawing of broad black arrows across continental maps: migration theories are out of fashion. Yet in Africa, the use of such broad black arrows to indicate the movement of monolithic 'cultures', 'people' or 'language groups' has continued almost unabated, to the present day.
>
> (MacDonald 1998: 33)

Though some scholars of the "classificatory-historical period" made an effort to trace the origin of cultures (for example, Childe 1925, 1936), the general tendency of the culture-historical approach remained restricted to the mere description of cultures and their placement within a chronological sequence.

As the traditional concerns of this approach are not directed to the study of specific issues (*e.g.* cultural dynamics, cultural change, or cultural process) some archaeologists look at the culture-historical approach as a static paradigm. This approach seems overly concerned with the questions of what and when cultures took place, ignoring why they occurred. As to the question of how, the answer is usually explained through diffusion or migration. This led some scholars to turn their back on this approach as a discarded, old fashioned and out-moded paradigm. The following quotation illustrates this situation:

> Breaking away from the artifact-dominated culture-historical approach of his contemporaries, [Graham Clark who developed an ecological approach] argued that by studying how human populations adapted to their environments we can understand many aspects of ancient society.
>
> (Renfrew & Bahn 1996: 35)

By the 1960s, many archaeologists believed that the culture-historical approach did not provide the explanatory ground required for reaching more general conclusions about culture. Furthermore, newly developed scientific aids, especially those used in dating, came into light to make taxonomic systems, cultural typologies and seriations less useful than before (see Renfrew & Bahn 1996: 36).

Given that the major goal of archaeology is to explain what happened in the past, one of the main problems with the culture-historical approach lies in its descriptive nature. This descriptive nature led some archaeologists to look at culture-historical reconstructions as pseudo explanatory frameworks concedering that placing cultures in spatial and temporal frameworks does not constitute an end-product of archaeological research (*cf.* Binford 1977; Binford & Binford 1968, Hodder 1982a, 1982b).

Another problem with the culture-historical approach is adopting what was called the 'archaeological culture', a term which refers, according to Shennan's (1989) anatomisation, to the following:

> (a) as a result of the fact that people living in different places conduct their lives differently to greater or lesser extent, the material residues (and therefore the archaeological record) of those ways of life will also differ;
> (b) [traditional] archaeologists have classified these patterns of spatial variation into entities called archaeological 'culture'; a culture must be distinguished by a plurality of well-defined diagnostic types that are repeatedly and exclusively associated with one another and, when plotted on a map, exhibit a recognizable distribution pattern ...' (Childe 1956, p. 123);
> (c) these entities which have been constructed have been regarded as actors on the historical stage, playing the role for prehistory that known individuals and groups have in documentary history;
> (d) in playing this role these 'cultures' have been regarded as indicators of ethnicity- self-conscious identification with a particular social group; and
> (e) in their roles as indicators of ethnicity, archaeological 'cultures' have had, and continue to have, a political role as legitimators of the claims of modern group to territory and influence.
>
> (Shennan 1989: 5-6)

This concept of archaeological 'culture' dominated the thought of the scholars of the 'classificatory-historical period'. Childe (1929), for example, wrote:

> We find certain types of remains –pots, implements, ornaments, burial rites, and house forms- constantly recurring together. Such a complex of associated traits we shall term a 'culture group' or just a 'culture. We assume that such a complex is the material expression of what today would be called a 'people'.
>
> (Childe 1929: v-vi)

Such a concept of culture, as Johnson (1999: 16-17) states, is normative and polythetic: normative since "it depends on two assumptions: first, that artefacts are expressions of cultural norms, ideas in people's heads, and second, that those norms define what 'culture' is"; and polythetic because "it depends on a number of different traits occurring together rather than on one trait alone". This normative view of culture also means that the culture-historical approach tends to "particularize what archaeologists say about the past rather than to generalize" (*ibid.* 17). In other words, traditional archaeologists emphasise not similarities but differences and particularities between cultures.

Another problem raised by such a normative view of culture is that "cultures tend to be seen as unchanging" (*ibid.* 17). This means that when cultures do change, according to culture-historians, it is only through diffusion, migration, or acculturation. Binford described this as the "aquatic view of culture" in establishing his "New Archaeology":

> What Binford meant was that traditional archaeologists saw the map of the prehistoric world as being a little like as a large pool of water. When an innovation was made for whatever reason in a given place, it would tend to spread through the process of "influence" or diffusion in all directions. Like the ripples from a stone dropped in the pool. In any given location, then, one would see cross-cutting 'ripples' of influence.
>
> (Johnson 1999: 19)

From the theoretical point of view, culture history seems to involve only low-level theory to answer archaeological problems that were mostly historical (statics). This resulted from its descriptive nature. This led Binford (1977) to address what he termed "middle-range or bridging theory" in his search for meaning (dynamics) in the archaeological record. This term refers to "those constructs with assumptions and propositions whose implications can be examined empirically, but which are sufficiently general to be incorporated into ever broader generalizations" (Goodyear; Raab; Klinger in Willey & Sabloff 1980: 250). In the same connection Willey & Sabloff (1980) relate:

> The archaeologists must specify what conditions of past systems produce the patterning uncovered in archaeological field research and explain how and why the past dynamics of these systems produce the currently visible static record. This necessary treating of the relationships between statics and dynamics is, in Binford's opinion, the challenge to develop middle-range theory in archaeology. [...], not only must archaeologists learn how the archaeological record was formed (an exercise on the lower theoretical level of transformation process), but they must be able to explain why a dynamic system of the past produced the static archaeological record of today (the middle-range theoretical exercise in the assignment of meaning).
>
> (Willey & Sabloff 1980: 250-251)

The culture-historical approach, thus, is heavily criticised for its general focusing on the static aspect of the archaeological record which leads to a tendency of ignoring the relationship (space) between the past (statics) and the present (dynamics). Its main interest is directed to where these archaeological materials lay (the low-level theory). On the contrary, non-traditional approaches (*e.g.* the New Archaeology) have directed their research to the question of meaning: what do the archaeological materials mean?

In the early 1980s, a group of archaeologists (*e.g.*, Hodder 1982a, 1982b; Shanks and Tilley 1987) suggested a more holistic approach to cover the gaps left by the mere materialist approach of the processualists. Post-processual archaeologists insist that archaeologists can make meaningful inferences about ideology (values, beliefs and religion) as well as the more obvious socio-economic or technological elements of human adaptation. This is why some consider post-processual archaeology as the anthropology of material culture (see for example, Hodder 1982a).

II.3 Rebuttal:

As Johnson (1999: 20) shows, "Many have complained that the New Archaeology set up a distorted image of traditional thought for its own polemical purpose, a 'straw man' that could easily be knocked down". However,

> Traditional archaeology was not necessarily the narrowly descriptive, sterile pursuit that New Archaeology painted it. It can be argued, for example, that traditional accounts of migration and diffusion did address 'why?' questions rather than simply describe the data. Certainly books like Childe's The Prehistory of European Society presented a dynamic model in which indigenous cultures were seen as creative and dynamic and in which modified diffusion played a key role in explanation.
>
> (Johnson 1999: 27)

It seems reprehensible, therefore, to look at the cultural historical approach (at present) as the New Archaeologists did in the beginning of the 1960s. This tradition is just one of the many phases which give the history of archaeological knowledge its shape. If we examine the history of American archaeology (*cf.* Willey & Sabloff 1980), then, we can easily be acquainted with the progress that traditional archaeologists achieved during this stage of the archaeological research. Those who found in the traditional archaeology a 'straw man' always ignore or omit the fact that 'culture historical' archaeology continued to develop from the 1940s onward and begun to emphasise the context and the function of the archaeological materials. The undeniable achievements of the traditional archaeology since the 1940s includes important advances in seriation, typology and artefactual (esp. pottery) classification, culture-classification schemes, the study of artefacts as behaviour, the study of settlement patterns, the study of the possible relation between culture and milieu, and the use of scientific aids of other disciplines in the archaeological research (see Willy & Sabloff 1980: 34-180). Examples of the study of culture change, for instance, can be found in the literature of this period:

> Strong, assisted by W. R. Wedel, began with a rich background of historic-sites documentation that had been assembled by ethnologists and mature archaeologists [...] The chronological and ethnological aspects of the work were further enhanced and dramatized by the striking cultural changes that Strong was able to demonstrate [...] The potential of the [direct historical] approach for cultural interpretation and the examination of culture change was obvious.
>
> (Willey & Sabloff 1980: 108- 109)

Again, even if the culture-historical approach was seen to impede the explanation of change it seems difficult to ignore the fact that the efforts of traditional archaeologists must be seen as the corner-stone of the subsequent developments of archaeological science.

Finally, in their *Method and Theory in American Archaeology*, Willey and Phillips (1958) are of the opinion that archaeological research needs both culture-historical integration and processual interpretation. In the same context, Veit (1989) relates:

> In the 1960s, the liberation of archeology from the fetters of culture history was proclaimed under the banner of a 'New Archeology'. Today we can perceive an opposite trend. History has a feature once more. It is no longer the pursuit of cultural universals that is at stake. It is the variety and specificity of cultural developments on which people's efforts are focused. In the context of systems theoretical approaches the term 'culture' was at times reduced to the level of an extrasomatic means of adaptation to the natural environment. However, now there is a renewed interest in 'cultures' in plural and not merely 'culture' in general.
>
> (Veit 1989: 35)

Taking into account all these interesting remarks, what we need, therefore, is some sort of integration between the different theoretical approaches instead of signifying the culture-historical one as an out-moded or old-fashioned paradigm.

III. Identification of past ethnic groups and some related problems:

The identification of past ethnic groups or "identity" is a contentious topic with a long history of cultural and historical research:

> [...] ethnicity is a category that has sustained interest since the nineteenth century, foregrounded by writers such as Morgan, Kossinna, and Childe" (Trigger 1989). [...] The broader question of identifying ethnicity materially and symbolically extends back to scholars such as Montelius and Childe, through to Hawks, Piggott, the ethnoarchaeological work of Hodder (1982), the processual approach (Auger *et al.* 1987, Emberling 1997), and contextual ones (Aldenderfer 1993, Wells 1998).
>
> (Meskell 2002: 282- 285)

The numerous contemporary studies carried out on this topic (*cf.* Hodder 1982b; Dolukhanov 1989; Shennan 1989; Veit 1989; Jones 1997; Meskell 2002) demonstrate its continued centrality as an issue in archaeology.

In her work *The Archaeology of Ethnicity*, Jones (1997) attempted to define ethnicity as:

> [...] all those social and psychological phenomena associated with a culturally constructed group identity [...] The concept of ethnicity focuses on the ways in which social and cultural processes intersect with one another in the identification of, and interaction between, ethnic groups [...] Ethnicity is a multidimensional phenomenon constituted in different ways in different social domains. Representations of ethnicity involve the dialectical opposition of situationally relevant cultural practises and historical experiences associated with different cultural traditions. Consequently there is rarely a one-to-one relationship between representations of ethnicity and the entire range of cultural practices and social conditions associated with a particular group.
>
> (Jones 1997: xiii- 100)

Meskell (2002: 286), however, heavily criticised Jones' definitions of ethnicity as "necessarily vague enough to stand for any vector of identity- one could easily replace it [...] with status or religion". She wonders: "If indeed ethnicity is grounded in the shared subliminal dispositions of social agents and is shaped by practice, how might we approach this?" (*ibid.*). She goes further by showing that the study of ethnicity, according to the conducted research, is twofold: "investigating ethnicity answers questions about social differences in past societies [...], and [forming] a locus for extrapolation to contemporary questions about origins, legitimacy, ownership and ultimately, rights" (*ibid.* 287).

From the above, one can conclude that ethnicity is a classificatory terminology which depends on a number of variable racial, cultural, social, and historical factors. The intersection between these factors constitutes the ethos or the distinctive spirit of a particular people, group, or culture at one point in time. Ethnicity, therefore, should be understood archaeologically within the context of how a particular group of people were distinguished (mutually) from "others".

A quick review of current application forms used by, for example, schools, universities, and employers, demonstrates that the term 'ethnic' is also, but essentially, used to "classify" people according to their colour/racial backgrounds. One of the queries on these forms concerns the "ethnic" origins of the applicants (White, Black, Asian origin, Caribbean, Mixed, Others). This

classification/categorisation, whether for evaluating people or making sure that they are not discriminated against, leaves us with no doubt that a part of the notion of the "ethnic" concept they are concerned about is the racial differentiation of mankind. Yet, properly the term 'ethnic' also implies a number of considerations such as geographical origin, cultural and social behaviour, religious attitudes, and language. An 'ethnic group', moreover, can also be rooted in the blood/kinship relations and political systems.

According to Jones (1997: xiii) an 'ethnic group' is the term that refers to "any group of people who set themselves apart and/or are set apart by others with whom they interact or co-exist on the basis of their perceptions of cultural differentiation and/or common descent". This definition, however, seems to depend only upon two aspects that could constitute an ethnic group: the cultural and/or the genetic. It does not refer to the spatial dimension. As Isichei (1997: 175) relates: "concepts of ethnicity [are] partly determined by ecological factors". In many, though not all, cases, conflict between ethnicities takes place for geographical as well as cultural reasons. "The Land" thus could play a vital role in establishing ethnicity.

The above discussion, therefore, demonstrates the extent to which multiple factors are essential to understand what constitutes a particular people, ethnic group, or cultural identity.

As far as identifying past ethnic groups is concerned, I have mentioned Gustaf Kossinna, who developed an "ethnic paradigm" for German archaeology. Formulating the major principle of his methods, he states, "Sharply defined archaeological culture areas correspond unquestionably with the areas of particular peoples or tribes" (Kossinna in Veit 1989: 37). According to this paradigm -which is known in the terms of Kossinna as 'settlement archaeological method'- "artefact types could be used to identify cultures and those clearly distinguishable cultural provinces reflect the settlement areas of past tribes or ethnic groups" (Jones 1997: 2)? The mechanism of his paradigm lies in corresponding the above-mentioned methodological principle with the present or historically documented past ethnic conditions to verify the ethnic situation during prehistoric times (Veit 1989: 39).

Kossinna's work, however, has been justly criticised for a number of reasons which can be summarised as follows: First, his work was presented in a provocative and polemical style (*i.e.* his *Germani* seems to support the notion of an Aryan, Nordic ideal race, superior to all other peoples). Second, he built his hypothesis about peoples, races, and ethnic groups depending on his linguistic and philological concepts (he was originally trained in the field of Germanic philology). Finally, he was influenced in his work by the near-genocidal evolutionary concepts which dominated some academic agendas during his time. So, it is not surprising that in the 1960s many archaeologists discarded the study of ethnicity "as the epitome of a seemingly out-moded paradigm, culture-history" (Jones 1997: x).

There are, however, other reasons that some archaeologists became sceptical about working on ethnicity. One of these reasons lies with the fact that the ethnic terminology is obscure. It is difficult to find an agreement among the contemporary scholars about the use of such a terminology:

> Early medieval authors stress origin, customs, languages and law, as the most significant characteristics by which ethnicity is determined. In contemporary terms each of these characteristics was subjective and together [they] do not provide a means by which one can determine the ethnic identity of individuals or groups [...] ethnicity did not exist as an objective category but rather as a subjective and malleable category by which various pre-existing likenesses could be manipulated symbolically to mould an identity and a community.
>
> (Geary in Shennan 1989: 11-12)

Another reason is that environments also shaped seemingly cultural variations we can find in the archaeological record. Emphasis should be put in the fact that humans are also a product of both culture and environment.

In the light of the above-mentioned reasons, it is important to remember that the ethnic interpretation of archaeological data and ascribing archaeological finds to specific peoples or ethnic groups seem to be uncertain, tentative and doubtful. Consequently, the question of ethnic interpretation requires the support of other evidence that make the archaeological argument possible.

In conclusion, it goes without saying that one of the most difficult tasks in archaeological research is to establish a certain equation between ancient peoples or (ethnic) groups and culture depending on material remains of the archaeological record. This difficulty could prevent us from reaching a 'real' ethnic characterisation of prehistoric societies, and, consequently, has led some archaeologists to discard the study of ethnicity entirely. Yet, this key issue merits further analysis.

IV. Identifying ethnic units in rock art as an aspect of material culture:

IV.1 Identifying ethnic units in material culture:

From the previous section, we can realise that multiple factors shape notion of 'ethnicity' or 'ethnic' group. Clarke (1978) has expressed this notion by relating:

> Throughout historic and prehistoric time the individual man has inherited a particular physique, acquired a particular linguistic dialect, grown up within a particular social organization and used particular artefacts in the pursuit of particular activities. The man has been the node at the intersection of social, material, linguistic and genetic sets, each operating in different attribute dimensions, categorizing different aspects of the same populations.
>
> (Clarke 1978: 363)

Accordingly, it should be understood from the beginning that material culture (including rock art images) represents just a single element of what constituted ancient cultural groups. Depending on ethnoarchaeological research, and taking the 'Bantu' as an example, we can realise that:

> [...] the Bantu language group encompasses one set of people, the 'Bantu' culture group another somewhat equivalent set, the 'Bantu' technocomplex another much large grouping, the ethnological 'Bantu' tribes another and the subrace 'Bantu' yet a fifth set [Diagram 1]. These sets are not identical. However, all of these sets share a large subset of people representing the intersect of all or most of these variously defined sets. It is this polythetically bounded common set with most of the variegated 'Bantu' essentials which we commonly designate 'the Bantu'- unless we are more narrowly concerned with the Bantu proper, the set of Bantu-speakers. The source for confusion is quite apparent in the variety of different sets that one can designate 'Bantu'.
>
> (Clarke 1978: 372-3)

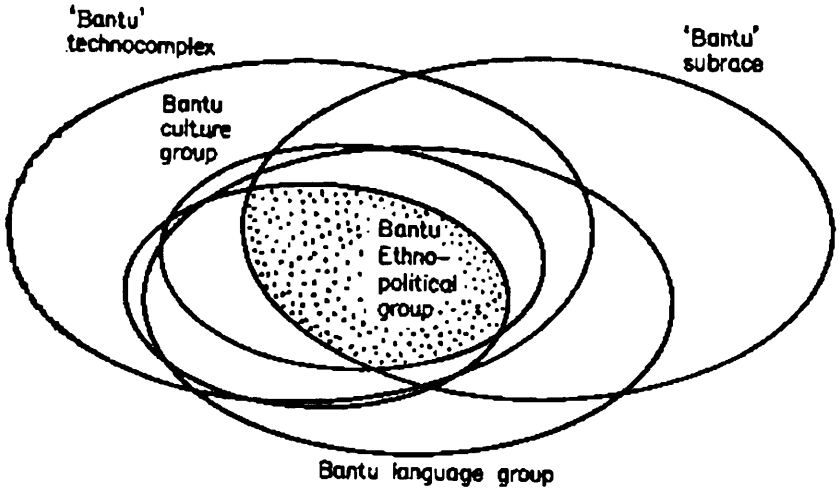


Diagram 1

The several different sets or the taxonomic indicators of the Bantu

(Clarke 1978: 373)

With regard to Clarke's conception of material culture mentioned above, we can also find the following:

> An abstraction of material cultures so that they had no relationship to other realities was taken further by David Clarke [...] Archaeological entities such as cultures were not necessarily of any relevance of entities defined in other sciences such as social anthropology. Although Clarke examined the relationship between material culture and linguistics and tribal similarity, his main theoretical stance [...] was that archaeological entities could be studied in their own right.
>
> (Hodder 1982b: 3)

From the above, it is possible to conclude that general approaches used in studying cultural entities (whether 'normative', 'ecological' or 'environmental', and the 'functional' or 'processual') seem to fail to prove that "culture" and "ethnic group" are always equated. In other words, whichever approach used, it seems extremely difficult to draw marked ethnic boundaries in archaeological record. This situation led Renfrew (1974) to suggest the total abandonment of the notion of culture as a recognisable archaeological unit.

Attempts have been made by archaeologists to define more vague zones of interaction, or social boundaries, in the archaeological record. According to Stark (1998: 1) the boundaries of social groups "are marked by distinctive patterns in the archaeological record". The study of formal variation across space or spatial variability discerned in this record may lead us to identify boundaries between archaeological entities. Among the various methods, we refer here to two technologically oriented approaches to study the distinctive patterns or formal variations (spatial variability) in material culture: the Americanist (Anglo-American) and the French (European) traditions:

> The French tradition of *technologie* [*techniques et culture*] explores links between cognation and technical choice by examining the process by which variations is created during the manufacturing sequence [*chaîne opératoire*]. The Americanist approach [anthropology of technology or anthropological archaeology] examines formal variation in finished products and uses a number of different techniques to interpret spatial [or distributional] patterning in the archaeological record.
>
> (Stark 1998: 2)

Archaeologists, however, continually debate the validity of different conceptual tools for measuring social boundaries and the meanings of the patterns that they find in the archaeological record. In his attempt of interpretation of the nature of 'cultures', Hodder (1982b) explains the early ideas (*e.g.* Macalister, Burkitt, Crawford, Childe) that stands behind the relationship between material culture and people:

> The artifact types which make up cultures were seen as being inventions that had been socially successful. The invention became a 'type' by being accepted as a norm of behaviour for the members of a group. Types make up models which present accepted and successful ways of doing things and which can be passed from generation to generation. Types thus represent a collective and tested wisdom and groups of types distinguish peoples.
>
> (Hodder 1982b)

Contrary to culture historians with their "normative" approaches employed in classifying material culture into cultural areas (sub-sections II: 1 and 2, this chapter), New Archaeologists and processual archaeologists believe that the spatial distribution of ancient technology dos not necessarily equal past 'ethnicity':

> Most New Archaeologists and processual archaeologists insisted that distributional patterning in archaeological record could not be equated with ethnic (or ethnolinguistic) groups of the past (Cordell and Yannie 1991; Shennan 1989). Studying technological variation was called passé, and reconstructions of ancient technologies lacked merit unless and until they were placed in an explanatory framework.
>
> (Stark 1998: 3)

New archaeologists, however, with their functional and systems theory approaches used to study and understand formal variation in the archaeological record have been heavily criticized:

> One of the enduring legacies of the New Archaeology lay in its division of material culture variability into discrete realms of technology, function, and style. Technology was defined as raw materials and production steps, while function became associated with utilitarian or instrumental purposes. [...] style was viewed as a kind of residual quality, whose primary function was emblematic, selectively, or even epiphenomenal.
>
> (Stark 1998: 4)

Culture thus vanished from the New Archaeology perspective. Formal variation in style proved to have not only utilitarian but also social and ideological functions. Ethnoarchaeological research on material culture (*cf.* Hodder 1982b) showed that "makers and users of material culture routinely blur the boundaries between technology, function, and style" (Stark 1998: 4-5).

From all the above mentioned in this sub-section, we conclude that material culture, language and self-identification (ethnicity/identity) do not necessarily equate. They are usually partially overlapping categories. Rock art -which is both material culture and language (symbolic system) - could be shared or divided across or within other bounded socio-cultural categories.

IV.2 Historical linguistics as an analogue for rock art (instead of "ethnicity"):

Taking into account the sophisticated problems encountered in studying ethnicity (see secton III, this chapter), language could provide a restrained analogue to achieve such an archaeological aim. In this regard, Trigger (1989) has suggested that many archaeological problems can be resolved if archaeologists attempt to combine their

data with that of historical linguistics. Blench and Spriggs (1998: 1) also believe that the data obtained from linguistic prehistory and archaeological prehistory "[is] open to constant reinterpretations as new evidence come in and new models are adopted". This inclination, however, is not new in archaeological thought. Scholars of the nineteenth century had "a strong convention that language could be analysed to establish historical results" (*ibid.*7):

> There is in fact no sure way of tracing the history and migrations of the early inhabitants of the world except by means of their languages; any other mode of enquiry must rest on the merest conjecture and hypothesis. It may seem strange that anything so vague and arbitrary as language should survive all other testimonies, and speak with more definiteness, even in its changed and modern state, than all other monuments however grand and durable.
>
> (Donaldson 1839: 12)
>
> Quoted in
>
> (Blench & Spriggs 1998: 7)

One reason for discussing languages as an archaeological analogue instead of ethnicity is that "language and identity are closely linked and [...] One's 'ethnic' affinity is often determined much more by language than by any identifiable physical characteristics" (Renfrew 1987: 2). Another reason is that it is possible in many cases to generate "testable hypotheses":

> Historical linguists are often tempted to throw off hypotheses on the origins of food production far more quickly and perhaps more casually than would be permissible within other academic frameworks. [...] when a prediction is made then it can at least be tested. So, for example, if an historical linguist claims that certain species of domestic animal can be reconstructed back to the proto-language of a particular phylum, and at the same time makes a proposal for the homeland of the speakers of the proto-language, then excavations should ideally be able to confirm the presence of those species.
>
> (Blench & Spriggs 1998: 12)

The same can also be applicable to the study of ethnic and cultural historical issues via rock art. In effect, linking a particular group of rock art images with a particular language/proto-language, then, can be tested depending on other evidence derived from other archaeological materials.

In essence, as rock art imagery itself constitutes a type of "language" which may cross "cultural" or "biological" lines, historical linguistics is a more suitable field for prehistoric comparison than "ethnicity". Taking into account all the above mentioned in this sub-section, the author in his case study (section VI, this chapter) will avoid linking the rock engravings of northern Atar with a particular ethnic/physical type. Instead, the linkage will be made depending on the accepted pattern of Saharan and West African language phyla/proto-phyla. This, in the author's opinion, could allow a more critical and complex perspective to study of the broad outline of the human history in this part of the Sahara.

IV.3 Rock art and style in examining culture or "language":

The study of style played and still plays one of the central roles in archaeological research. In this regard, "archaeologists have often assumed that studies of style will provide clues for distinguishing social groups in the archaeological record" (Stark 1998: 2). Such a use of style depends on the argument that it "is seen as being explicable in terms of its function in expressing roles and relationships and integrating individuals within groups (that is, groups with common styles)" (Hodder 1982b: 204).

According to this perspective, rock art researchers have also employed both "artistic" and "technical" style as key tools for studying the possible relation between different archaeological traditions and ethnic/linguistic groups. Style, above all, is "a kind of artistic type ... a recurrent cluster or complex of interrelated traits" (Munro in Brandle 1977: 222).

Muzzolini (1995b: 193) sees "artistic" styles as defining and maintaining boundaries between social groups. Wiessner (1983, 1990) also speaks about the notion of the "emblematic style" trying to turn our attention to the symbolic or the representative role of style. As Bahn (1998: 172) shows, one way is "to look for clusters of images which are so similar stylistically and technically that is very probable that one artist or group was responsible". In his study of the rock art of Northern Saudi Arabia, Khan (1993: 21) uses style based on "the assumption that an artist often reduces, adds, or modifies certain traits, either to secure the identification of the work of art or for other reasons". According to his study of rock art of Saudi Arabia, "such decorative traits

are often restricted to certain specific regions or territories, and these stylistic differences can then be used to distinguish or recognise the work of particular social groups or the artists of the same school of thought" (*ibid.*). Discerning the variation in and the evolution of rock art style in a particular area thus may lead to conclusions on the identity of the artists and/or the ancient cultural/ethnic groups that once lived in this area.

Similarly, the study of (technical) style could be useful in distinguishing social boundaries of ancient groups. The importance of this criterion lies in the fact that in some cases, and for a reason or another, the same (artistic) style can be used by more than one group or different groups. In such cases, the manner of technical execution of rock art images may offer a reliable criterion to distinguish between the different groups via notions of social boundaries expressed by limits of pedagogy –as the face to face transmission of techniques. According to the French tradition:

> Any technology is a system of behaviors [...] Behaviors and techniques are guided by human choices and most steps in any technological process can be carried out using several alternative approaches. It is this arbitrariness in technological traits that generates variability in material culture patterning. In artefact type [and rock art as well] we may describe this totality as technological style [...]. We may describe the combination of manufacturing practices that a group uses to make different goods [or artistic products or images] as its technical system [...] Most everyday goods are made through a series of repetitive and mundane activities: their consistency reflects "the way things are always done" in a local tradition (Wiessner 1994: 161, 195). Alternatives selected by artisans in their choice of materials and in the form of their products reflect a thoroughly internalized understanding of the manufacturing tradition. They generally pass this knowledge from one generation to the next [...], and some aspects of the operational sequence are more stable through time than are others. These technical choices, rather than simply raw materials and or design styles, are crucial in determining the outcome of a product. Technological styles thus reflect conscious and unconscious elements of technical choices.
>
> (Stark 1998: 6)

One of the most recent rock art studies that employed this approach is that of Holl (2002: 75-118). In his "Time, Space, and Image Making: Rock Art from Dhar Tichitt (Mauritania)", he attempted to develop an archaeological methodology for the study of rock art imageries founded on the hypothesis that "Cognition is the key parameter

holding all the other variables together" (p. 76). Using the concept of *chaîne operatoire* (modus operandi), which does not deal with rock art images as "finished products" but as "scheduling and succession [or sequencing] of technical gestures [or sets of actions]" (p. 77), he concludes that the rock art images in this area, which was occupied by Late Stone Age (LSA) agropastoral communities from *ca.* 2000 to 500 BC (p. 78), belong to two "families":

> The earlier consists of images with dark patina (DP) and the later comprises representations with light patina (LP). Images from both families, with a certain amount of variation, are made with pecking technique. There are two kinds of pecking technique: one with and the other without the use of hammerstones [...] the distribution of LP images in the Saharan landscape may have been used as "road maps" by those able to decipher and process the information. DP images on the other hand are clearly linked to an agropastoral way of life and are confined to the Late Stone Age settlement. Finally, motivation for image making ranges broadly, from ludic and playful activities to deeper and obscures symbolic and/or religious purposes.
>
> (Holl 2002: 80, 116)

The above example shows the extent to which (technical) style can be useful in defining or delineating social boundaries between the different ethnic/cultural groups. Studying the distribution of one or more technical styles, for instance, then, could allow valuable conclusions on the possible cultural historical associations of past human group(s) in rock art area(s) under investigation.

Other than the significant role of (artistic) and (technical) style in distinguishing between social groups (via rock art), thematic content is also of extreme importance in achieving this task. Both animal representations and human figures -- as will as abstract signs or geometric motifs, and inscriptions -- have played a central role in culturally attributing rock art to different groups and, consequently, in establishing initial culture-historical sequences (*cf.* Dupuy 1988, 1995; Lhote 1959, 1961; Mauny 1954, 1970a; Monod 1937, 1938; Mori 1998; Muzzolini 1995a, 1995b).

In addition to the criteria given above ('artistic', 'technical' style and thematic content), specifying or identifying distinct social groups via rock art should meet a number of requirements which, according to Muzzolini (1995b), follow:

a) Rock art representations, whether they are paintings or engravings, should be restricted to a particular area with well-defined borders.

b) If there is more than one artistic tradition at the same zone, it is important to keep in mind the following rules to resolve that each artistic tradition represents a distinct group:

1- Clear differences in the physical features or costumes of human figures are likely to indicate separate groups.

2- Variation in associated characteristics (*e.g.*, represented animals or types of weapons), may be used as indications of economic or ideological difference.

3- If there is no difference in the common characteristics we have to test for differences in the symbolic 'grammar' of the local traditions (associations of motifs and positionings).

4- The existence of more than one artistic tradition representing two or more different linguistic/cultural groups does not necessarily mean that these groups were contemporaneous one to another: the spatial dimension does not necessarily meet or coincide with the temporal one. The contact between two groups or living together in the same territory does not inevitably mean that one of them is not linguistically/culturally distinguished.

In Saharan rock art, the final phase of Round Heads, for example, is also represented among the depictions of the Final Bovidian School; the matter which Muzzolini (*ibid.* 198) considered as "survivances artistiques" of residual subgroups among what he describes as different Euro-asiatic 'ethnic' groups that arrived at Tassili after the aridity of the Post-Neolithic.

IV.4 Major problems with using rock art as a tool for studying the ancient cultural and/or linguistic groups of the Sahara:

The usage of rock art to delineate cultural and/or linguistic groups that occupied the Sahara in different periods is not without difficulties. In this sub-section I will discuss a number of problems that might affect placing rock art images within a culture-historical context.

First problem:

The relation between artistic schools and cultural/linguistic groups is not necessarily visible, clear or even simple:

> The ethnic group which is manifested by the language of an artistic school could very well represent the ethnic group in its whole or only a segment of it (a caste for instance). On the contrary, more than one ethnic group may have adopted the same artistic conventions because of historical reasons.
>
> (Muzzolini 1995b: 194)
> (Translated from French)

Muzzolini (1995b) gives two cases for what takes place when a school is replaced by another one in the same place. The first case refers only to the modification of style, technique and thematic content. If the modification or transition is gradual and obvious, then it is possible to attribute this phenomenon to the same ethnic group. The evolution, which is generally unconscious in this case, may have originated from varied causes such as appearance or disappearance of remarkably talented artists, demographic tension, social or traditional values, historical or climatic events, new alliances or new infrastructure in the ethnic group. The second case implies an abrupt change or abandonment of the style, technique and themes. This leads to a total change of school and its replacement by another. The usual explanation of this phenomenon is that of invasion or migration (*ibid.* 194-5).

The complexity, therefore, lies principally in the fact that it is extremely difficult to specify what constitutes homogeneity in style, or whether the represented images belong to one or more groups. On the other hand, the majority of rock art studies (*cf.* Willcox 1984; Mori 1995; Muzzolini 1995b) demonstrate that the same group sometimes gradually modifies different style, technique, and themes. This means that different artistic "schools" could belong to not multiple but one cultural and/or linguistic group.

Second problem:

From the practical point of view, it seems difficult to depend only on artistic images to study the different groups of people that once lived in the Sahara during the Holocene. This led Barich (1998: 56), for instance, to once more pose the question of whether iconography can be regarded as an interpretative source of social reality. As a matter of fact, most rock art images, especially those of human figures, do not even provide the required details that enable us to study the physical appearance of groups (face shapes, skin tones, costumes *etc.*). According to Lhote (1970: 92), from more than a hundred human figures known at the South of Oran, for example, there are only three showing the sufficient profiles that enable one to specify even whether they are Caucasoid or Negroid. Regarding the same problem, Willcox (1984: 31) also writes, "The human figures [in the Western Sahara] are generally too stylised to permit racial identification".

Third problem:

Even if one claims that rock art images are a viable means of studying the past social boundaries of inhabitants of the Sahara:

> [...] the whole matter is further complicated by the enormous problem arising from the fact that "our" way of perceiving the world and reality is that of a highly specialised society profoundly conditioned by its situation amongst other contemporary societies, all of which have their different positions on the horizontal scale of cultural differences, and are, in any case, far removed from what the world of prehistoric man must have been
>
> (Mori 1995: 23)

Indeed, this notion can be applied to not only the interpretation of the non-representational art (*e.g.* symbols and geometric motifs) but also on identification, and consequently, interpretation of human representations depicted in the Saharan rock art. This means that human profiles -even those that show clear details - do not necessarily illustrate the real physical types of the ethnic groups or the artists. In this regard, we have to remember that even what we call naturalistic or realistic does not necessarily represent "our" reality (see sub-section III.4, Chapter 1, this thesis).

Fourth problem:

We should expect that an unknown part of this priceless wealth of Saharan rock art has been destroyed and lost forever. Another part has been vandalised and the damage does not allow us to discern some important details that enable us to place these artistic traditions in their cultural historical context. Furthermore, it should be understood that the possibility is great that the artists, for one reason or another, have not represented some themes that we may think are of a vital importance. Moreover, the existence of rock art is almost constrained or regulated by "the availability of suitable rock surfaces and pigments" (Camps 1983: 555). Rock art along the southwest coast of Mauritania, for instance, is completely absent (see Chapter 1, this thesis). Is this a reason to conclude that this region was not populated or abandoned during the whole Holocene? The answer is no. Archaeological finds (*e.g.* weapons or stone tools, harpoons) refute any such hypothesis (see, for instance, the distributional maps of the Neolithic in Mauritania: Vernet 1993: 58, 97 and 108). Accordingly, it seems not reliable to rely upon rock art images alone in studying the culture history and the peopling of the Sahara during the Holocene. In sum, from the practical point of view it seems that we deal with incomplete and imprecise 'rock art or pictorial record' which does not allow us to deduce certain information on the Saharan population during the Holocene.

Fifth problem:

Most parts of the Saharan rock art corpora, especially those of naturalistic style, lack any associated direct dates that enable one to securely place them in their culture-historical context:

> Undoubtedly, these engravings [the naturalistic] were produced during the course of countless centuries, and each of the periods which has the same style and subject-matter may have lasted for several millennia – so that even a similarity in the patina does not permit conclusions to be drawn with regard to chronological sequence.
>
> (Lhote 1961: 134)

This problem has resulted from the difficulty of relating most Saharan rock engravings and painting with the datable layers or other precisely dated archaeological finds (for a discussion of this problem and the possibility of dating some Saharan rock engravings directly, see for instance, Mori 1974; Milburn 1981).

Sixth problem:

One final problem that should be mentioned again here is that of defining ethnicity itself (see section III, this chapter). In this respect, emphasis should be put on the fact that ethnicity is of a fluid nature. As Shennan (1989) warns us in his discussing the relation between ethnicity and archaeology: "Ethnicity must be distinguished from mere spatial variation and should refer to self-conscious identification with a particular social group at least partly based on a specific locality or region". His definition, if acceptable, puts prehistoric archaeologists in general and rock art researchers in particular in a very difficult situation since only a long-term image is available for them. In Shennan's words: "[Archaeology] does not have access to people's self-conscious identification" (*ibid.*). What makes this problem more complicated is that multiple ethnicities that were politically independent and participated in -sometimes- different symbolic universes adopted a certain number of common cultural values or expressions and, consequently, common artistic conventions (Muzzolini 1995b: 196). This means that rock art, which as Muzzolini suggests can be seen as a "universal phenomenon", signifies a real identity more vast and more vague than any single "ethnicity".

The above-mentioned problems, consequently, lead us to admit that we need to a more multi-disciplinary model to study culture history with rock art images.

V. The need for a multi-disciplinary model:

In order to place the engravings that are the focus of this study in their culture-historical context, we should consider other evidence that may allow better insights. In other words, many lines of enquiry should be pursued if one attempts to place rock art representations in a culture-historical context and deduce information about ancient populations. MacDonald (1998) gives an excellent example in studying allied

issues. In his synthetic study of the peopling of West Africa during three time-depths: the Terminal Pleistocene and Early Holocene (12,000-8000 BP), the Mid-Holocene (8000-4000 BP), and the Recent Holocene (4000-2000 BP), he draws our attention to the importance of the consideration of a wide variety of multi-disciplinary evidence including archaeology, physical anthropology, rock art, and historical linguistics. Certainly, I agree with MacDonald (1998) that one branch of knowledge alone "does not possess sufficient pieces on its own to reconstruct the puzzle of [Saharan] population origins" (*ibid.* 35).

Thus, a broader and more critical and complex perspective is required if we are reasonably to come to grips with a richer view of the past depending on rock art subjects. Besides rock art, other secure archaeological evidence, in addition to those derived from other disciplines should be considered in any attempt to reconstruct the cultural history of the ancient people of the Sahara.

V.1 Archaeological evidence:

Despite the harsh conditions of the Sahara today, archaeological finds (*e.g.* lithics, bones and ceramic) confirm the human presence in this wide zone during the Terminal Pleistocene and the Holocene. Regarding this point, Camps (1982: 550) writes "[...] the Sahara has not always existed in the form in which we know it today. During Palaeolithic times, similar or comparable lithic industries are found throughout both the countries of the Maghreb and the regions which today are desert". The significance of these archaeological finds lies in the fact that it is possible to deduce valuable information about the social boundaries of ancient populations by analysing these diverse industries.

If the industries and their associated economies are defined, then, it is possible to correlate the obtained data with the information obtained from the analysis of other contemporary rock art images (*e.g.* represented weapons, represented animals) (see, for instance, Cornevin 1986; El-Rashdy 1986; Roset 1986). In some cases, it is possible to correlate these archaeological finds with rock art images in order to evaluate some conclusions drawn by early rock art researchers. For instance, and contrary to what was believed in the 1920s and 1930s, it now seems probable that the

Naturalistic *Bubaline* engravings, which are supposedly the most ancient rock art of North Africa, date not to the Palaeolithic but the Neolithic period. This was established in the light of ceramic sherds found in abundance around almost all the Saharan Atlas rock art sites that actually exhibit engravings of "*Bubaline*" style (see Muzzolini 1995a: 59).

Neolithic fireplaces (see sub-section IV.1.2.4.1, Chapter 5) can also be of great importance in studying the peopling of the Sahara and related issues. For example, attempts can be made to correlate the distribution and density of these fireplaces with the distribution of rock art sites that comprise cattle or bovid representations. Likewise, metal objects or ironworking as well as the new features of pottery could also play a significant role in seeing rock drawings within a culture-historical context:

> Basing himself on the two dates of –730 and –210, obtained [...] from charcoal taken from different samples at Iwelen [the Air massif (Niger)], J. P. Roset [...] states [that] the presence of metal objects and two[associated] representations of chariots indicate the arrival in northern Air of 'the first of many waves of Berber immigration, the ancestors of the present-day Tuareg.
>
> (Cornevin 1986: 107)

These examples illustrate now, rightly or wrongly, that archaeological evidence has been used to contribute to the study of Saharan rock art and establishing a relative chronology that facilitates the task of placing the paintings and engravings within a culture-historical context.

V.2 Physical evidence for multiple Saharan populations:

The study of different groups that occupied the Sahara during the late Holocene via rock art can also be supported, in some cases, by physical data. Evidence from physical anthropology could provide rock art studies with significant data regarding the genetic groups of peoples who left their traces on the rocks (*cf.* Dutour 1989a, 1989b; Garcea 1993; MacDonald 1998; Paris 2000; Petit-Maire *et al.* 1983; Roset 1986; Vernet 1993). Evidence from physical anthropology might aid us to answer the questions of which humans have populated the Sahara during the late Holocene?

However, evidence from physical anthropology should be used with great caution. The reason for this is that such a type of evidence is often too imprecise to be of much use and may involve us in contentious contemporary racial issues (for more discussion on the topic, see sub-section VI.1, this chapter).

V.3 Ethnographic evidence:

Briggs (1957) poses the question:

> What living groups can be expected to throw light on the prehistory of the Sahara? What living traces, if any, remain of the people who made the tools that litter the surface of the Desert and the many undeniably ancient pictures among the countless numbers that so often ornament its rocks?
>
> (Briggs 1957: 195)

Ethnographic data is frequently used in interpreting and explaining rock art images and their meaning (*cf.* Bahn 1998; Dowson 1988; Hodder 1982a; Halifax 1982; Ki-Zerbo 1981; Lewis-Williams 1997, 1998; Lewis-Williams & Dowson 1988, 1990; Orloff 1986; Shafer 1986; Solomon 1998; Taçon & Chippindale 1998; Wosien 1974). Ethnographic analogy is also employed to study culture-historical continuations and possible relations between living groups and the rock-art of the past. Lhote (1970), for example, attempted to link a number of human depictions of the Tassili with the Fulani. In this regard he wrote:

> The nearness with the actual Peul herders does not stop with physical analogies because the ethnographic elements coincide equally. We see on the paintings the pagne of the belt and the hats of the men, the skirts of the women, such as are still worn by the Peul and the representations of an encampment with the huts in line, the calfs on a lead, the bulls grouped round about; all correspond to the way the Peul do it now.
>
> (Lhote 1970: 100)
>
> (Translated from French)

From the above statement, it appears that Lhote depends on not only cultural similarity but also geographical continuity to establish such a link. Within this frame he employs the possible similarities in the life conditions, the ecological environment as well as the semantic function of certain themes represented in the rock art, the

legends and the mythology. However, Lhote (1970) ignores the cultural heterogeneity of the Peul and the relatively recent origins of the Pan-Sahelian Peul culture when he makes this assertion (*cf.* Dupire 1996).

Ethnographic data has also been utilised to link Saharan paintings and engravings (that of the Tassili, of the Air and of northern Mali) with the modern Tuareg populations and consequently with their notional ancestors: the proto-Berbers (*cf.* Hachid 2000; Mori 1998; Muzzolini 1995a; Orloff 1986). Emphasising the spatio-temporal link between the observed archaeological facts and the living ethnographic facts, and supposing not only an historical continuity but also a cultural continuum between the modern populations and the past works of art, Orloff (1986) writes:

> It seems to us that the Sahara, in particular the plateau of Tassili n'Ajjer, the massif of Ahaggar (in Algeria), and the Air (in Niger) are the interesting cases where one can observe a cultural-historical continuity between the authors of the works more or less contemporary with the Lybico-Berber inscriptions and the Tuareg society, of which the Tifinagh alphabet permits us, not only to follow the different phases of Saharan rock-art, but also to confirm an ethnical continuity seeing as the Tuareg tribes are still familiar with the art of the populations who traced the figures of the pre-Cameline and Cameline Periods, already inscribed in their history.
>
> (Orloff 1986: 167)
> (Translated from French)

In some cases, this method could contribute to the study of peopling of the Sahara and the cultural history of different ancient groups that occupied the area during the late Holocene. But, such a contribution should be supported by information obtained from other research (*e.g.* historical and archaeological research) and should not be undertaken uncritically (as Lhote 1970, and Smith 1993 have both done).

V.4 Linguistic evidence:

Linguistic evidence could provide valuable information about the early history of the peopling of the Saharan and sub-Saharan regions. The attempts made in this direction (*cf.* Behren 1986; Blench 1993a, 1993b; MacDonald 1998) show that the information obtained from linguistic evidence played and still plays a vital role in studying and understanding a number of issues related to the history and prehistory of Africa.

Regarding the history of the Mande in sub-Saharan West Africa, for example, one can find the following statement:

> The main sources for the study of the historical influence of the Mande are oral traditions, linguistic documents, and ethnographic data [...] The Mande expansion may be presented provisionally as follows. Some early waves, which are [difficult] to date exactly, carried Mande speaking groups (Toma, Guerzé) to the south (where there were perhaps already some Mande on the edge of the forest), to the east (Samo), and the north-east (Dogon); the data which support such an hypothesis are mainly linguistic and ethnographic (for example, the ritual connexions between Dogon and Bambara Mandingo).
>
> (Vansina *et al.* 1964: 91)

Blench (1993a: 71), also, counted comparative linguistics as one of the sources that may offer valuable data about the timing, means and routes for the appearance of the livestock in Africa during prehistoric and historic times. In a similar context, Ehret (2000) relates:

> Horses first appeared in Africa, as far as we know, during the era of Hyksos rule in Egypt in the eighteenth century BCE. The animal probably then spread more widely westward among the Berber peoples during the next several hundred years. Finally, during the first millennium BCE, [...], some took the horse across the western Sahara desert. [...]. [As to] the words for "horse" used in later times south of the Sahara, in the languages of the western Sudan region: All through the basin of the upper Niger River and into the Senegal Basin, words such as *seso* (Mossi language) and *so* (Malinke language) mean "horse". These words can be derived from the Carthaginian word, transliterated as *ssw* and probably pronounced something like *sisu*. This information shows us that the knowledge of the horse first crossed the desert during the period of Carthaginian hegemony over North African trade, probably between the fifth and second centuries BCE.
>
> (Ehret 2002: 223)

The results of such research and the conclusions drawn on the language phyla of the Sahara and West Africa in addition to the information obtained from the other evidence may offer a unique opportunity to link a rock art corpus to one (or more) of the co-ordinate branches of these language phyla. Such a method may lead to relate the rock art corpus under study to the speakers of a particular language and/or their ancestors. One advantage of using "language" rather than "ethnicity" as a means to

discuss the association of rock art images with groups of makers is that linguistic classification is bases on a symboling system (such as art) than can cross-cut ethnic boundaries.

V.5 Historical reference:

It is useful to explore different types of historical references that could provide us with additional depth in searching for the history of the peopling of the Sahara. This method is frequently used in most if not all the research done on the pre-historic and historic cultures that once flourished there (*cf.* Behren 1986; Diop 1986; El-Mosallamy 1986). The identification of post-Neolithic cultures in the Sahara has been reinforced by the existence of historical references such as the works of classical writers (*e.g.* Herodotus), the Egyptian documents, or Berber sources. At the same time, we must remember that such ancient sources or historical references "are not always entirely trustworthy" (Brett & Fentress 1996: 204). One reason for that is subjectivity: the natural biases of any historian due to his/her ethnic, cultural, or political background.

The aim of using the above-mentioned evidence is to take an interdisciplinary approach to the culture-historical placement of the Atar engravings. The model presented in this sub-section is devised to answer three major questions: Which humans have populated the area under research and were at the same time most probably responsible for executing these engravings? How did they live? Where did they come from and what happened to them? In other words, the results of the interdisciplinary research may permit us to get a better understanding and deep insight of the culture-history of the authors of the northern Atar engravings.

VI. Northern Atar engravings as a reflection of ancient population: a case study:

VI.1 Method of study:

Broadly speaking, more information on the cultural history of the Atar region can be obtained if the images under research include human depictions than if they do not. In our case, however, the situation is not so; representations of humans at the two sites under investigation are completely absent. Indeed, the engravings of Foum Chor merely represent animals in addition to a number of signs and geometrical motifs as well as inscriptions in Latin and Arab characters, while those of Ahel-Ebdemmed comprise only animals and signs and geometric motifs (see Chapter 4, this thesis).

With such data, it would be impossible to make cultural attributions following the approach of Lhote (1970) or Smith (1993). However, there is more than one way to approach cultural identity via rock art. Indeed, the lack of human representations does not impose any grave limitations on considering ethnicity, but only precludes certain types of approach. Before inferring one of these ways, it is important to mention here that in this case study the author will attempt

1- to avoid linking himself to the broad typological periods that he already criticised in the previous chapter. Indeed, it is pointless to argue as to whether or not Foum Chor and Ahel-Ebdemmed engravings are, for instance, *Bubaline* or Bovidian. In this regard we have to remember that the *Bubaline* period "does not in fact [include] exclusively wild fauna, the animals most commonly represented being domestic cattle" (Muzzolini 1993: 234). On the contrary, the oldest phase of rock art in some parts in the Sahara is not necessarily marked by the depictions of Large Wild Fauna. As Willcox (1984: 31) demonstrates: "The earlier petroglyphs are not of the technique or quality of those of the Large Wild Fauna period to the west and do not include Bubalus antiquus or most of the big wild fauna, for example elephants and rhinos". Accordingly, studying ethnic groups and cultural history by dividing rock art to broad periods appears to be an error since these periods tend to be restricted to particular animal(s).

2- to avoid, as much as possible, reference to the physical anthropological literature. Indeed, this is not only unpleasant because of racial issues- it is too imprecise to be of much use. As MacDonald (1998: 46) shows, "[...] it should be noted that the ultimate discriminatory value of osteometrics and osteomorphology when applied to Holocene Sahara is as yet unclear, since in many cases even these broad types may grade into one another". Indeed, the genetic mixing of ancient Saharan populations seems to have been substantial (see, for instance, Dutour 1989a, 1989b; Vernet 1983, 1993; MacDonald 1998).

3- Instead, one possibility suggests itself to support the study of cultural groups via rock art: to link the recorded engravings of northern Atar with proto-linguistic groups of the Sahara and West Africa. This may allow for finer groupings than physical anthropology, and matches between 'symboling systems' rather than physical appearance. The collaboration between the recorded engravings and the proto-linguistic groups may produce a richer view and deeper understanding of the peopling of this part of the Sahara. At the same time we may link the engravings under discussion with the information obtained from the evidence of peopling of the Mauritanian Sahara during the Holocene (see previous section). In this way the possibility of placing the rock art of northern Atar within the known cultural traditions of the Sahara would be improved.

In order to pave the way to accomplish such a task, it is useful to consider the following issues:

- Archaeological evidence for the peopling of Mauritania during the Neolithic
- The origin and distribution of the human groups in Mauritania and the western part of the Sahara
- The population of the internal regions of the western Mauritania (including Adrar)
- Language phyla of the Sahara and West Africa
- Origins and prehistoric distributions of the language phyla

VI.1.1 Archaeological evidence for the peopling of Mauritania during the Neolithic:

According to Vernet (1983: 81-84) the Neolithic of Mauritania can be divided into four phases: Early Neolithic (5th–4th millennia BC), Middle Neolithic (4th–3rd millennia BC), Recent Neolithic (2ed millennium BC) and Protohistory (1st millennium BC):

Early Neolithic (5th– 4th millennia BC):

The Early Neolithic in Mauritania seems to have a double origin. First, it is the heir of the Capsian and Ibero-Maurusian civilisations of Maghreb. Yet, one can also maintain that in certain places, and particularly in the Adrar, the Neolithic is not a product of importation: some evidence suggests that the Neolithisation must have taken place in situ starting from a local Epipalaeolithic. The culture of fishermen-hunters of the early Holocene of the central and southern Sahara also reaches the south-east of Mauritania during this period.

Middle Neolithic (4th –3rd millennia BC):

The Neolithic of the north (Capsian-derived) reaches the south where it joins the Central Saharan cultures. From Morocco to Senegal, an immense network of lagoons appears with thousands of kilometres of coastline occupied by fisherfolk. The mangrove is a rich environment where people could find much more varied food resources than anywhere else in the Sahara. There was a mixture of hunting-gathering, herding and riverine fishing economics in northern Mauritania at this time according to the archaeological evidence.

Recent Neolithic (2nd millennium BC):

By 2000 BC, rapid environmental change impacts the Western Sahara. The northern part becomes a desert more rapidly than the southern where a new post-Nouakchotian climatic optimum favours the development of human groups from the North of Adrar to the Senegal and Niger rivers. Except for the littoral with the collection of shellfish, herding becomes the dominant activity. In addition, at the beginning of the second millennium cereal agriculture makes its appearance in Tichitt. In this period, pastoral groups prosper in the Adrar, in western Mauritania, and above all in Dhar Tichitt-Oualata where more than 250 villages are constructed.

Protohistory (1st millennium BC):

The last phase of Mauritanian prehistory is one of irremediable environmental decline; the climate degrades in such a way that only the most economically adaptable groups can remain. Apart from coastal shell collectors, fishermen, and remnant populations in Dhar Tichitt and the Tagant that still practice agriculture, few groups remain which are not nomadic. More nomads come from the Maghreb and occupy the country. These palaeo-Berbers will eventually occupy the whole of the Sahara reaching the 17° north latitude (the Rkiz massif, Assaba, and the region of Nema). They permanently banish to the South the remaining agriculturists (particularly the proto-Mande of the Tichitt tradition)- thus finishing what the climate had begun.

VI.1.2 The origin and distribution of the human groups in Mauritania and the western part of the Sahara:

Camps (1982: 552-3) distinguishes two great culture traditions succeeding one another during the Epi-Palaeolithic (or the Mesolithic) in North Africa and the Sahara: the Iberomaurusian and the Capsian. The Iberomaurusian culture (started before the fourteenth millennium BC to at least the middle of the eighth millennium BC) corresponds to a human physical type found at Mechta el-Arabi and archaeologically known as Mechtoid. This human "type" is recognisable osteologically in the Sahara until the end of the Neolithic. The Capsian tradition (started from the end of the eighth millennium BC until 4000 BC) belongs to a 'Proto-Mediterranean type' that merges with or displaces Mechtoids during the Neolithic.

Vernet (1993: 76) refers to three groups that drift into Mauritania during the Holocene. These groups include:

1- The civilisation of Tichitt which comes from the Central Sahara at *ca.* 4000 bp (and is linked by oral tradition and archaeology to the subsequent Mande peoples of West Africa).
2- A group enters the north of Adrar from Morroco- particularly in Addabet el Meddahia and Azrag- bringing along its pottery with circular bases and arrowheads that are technically highly developed.

3- A littoral group representing a branch of "Neolithic" fisherfolk; probably of a mixed North African and Sudanic origin.

The assemblage of these human remains, according to Vernet (*ibid.* 198), is very coherent: waves of population coming from the north during the Holocene and slipping towards the south driven firstly by climatic change and secondly by demographic trends.

This human landscape, as Vernet (*ibid.* 199) shows, is disturbed in two times in the Middle Neolithic

1- Following a relatively arid period towards 6000 bp, while the lakes in the north of Azawad became dry, 'Mechtoid' populations move southwards. In the same period, 'Proto-Mediterraneans' coming from the north-west towards 4500 appear in the region with their cattle.
2- A new arid period towards 4000 bp leads to creeping in the north. Indications show that towards 20° North latitude the persistence of populations with Mechtoid origin (Tintan) and groups of more or less mixed race (Chami) as well as populations of 'Sudanic' type (Tichitt, Khatt Lemaïteg).

From the above, we can conclude that human groups that occupied the western part of the Sahara during the Neolithic belonged to diverse origins and performed defferent economic activities (e.g. hunting, fishing, cattle herding, and agriculture).

VI.1.3 The population of the internal regions of the western Mauritania (including Adrar):

There is some data from some sites in these regions such as Oum Arouaba and Chemchane in Adrar or Khatt Lemaïteg in addition to the recorded rock art sites in El Rhallaouiya, El Beyyed, and Tenses (Vernet 1993). Adrar and the neighbouring regions Amsaga, Amatlich and Inchiri were occupied by a population of hunters before 5000 bp, while cattle herders are believed to be connected to populations of newcomers –originating from the north or the north-east rather than the east (*ibid.* 230).

According to Vernet (1993: 217-8), four occupations seem to succeed each other in this western part of Mauritania. In this regard, presents the following:

1- before the aridity of 4000 bp:

This occupation is attested everywhere by a very favorable environment. Towards 4500 bp, small lakes existed along Amatlish. As a result, hunters and fishermen populated the area. Cattle herding also reached the Adrar before the rupture of 4000 bp.

2- The period 4000 to 3000 bp:

This period shows the arrival of new occupants. This is evident by the new industries found in the region. These are notionally linked to proto-Berber population escaping the increasing aridity of the north of the Sahara, in search for humid regions probably for cattle herds.

3- The 3000 bp to 2000 bp:

This period witnesses a general retreat of the population with notable exception of the arid-adopted proto-Berber pastoral populations who expand to occupy much of the Mauritanian inferior.

4- Towards the beginning of our era:

Only Berbers with their dromedaries have been able to survive under current harsh conditions in the Adrar.

VI.1.4 Language phyla of the Sahara and West Africa:

The link between language and history is obvious. Yet, as the relationship between linguistics and archaeology is concerned, some archaeologists, as Blench & Spriggs (1999a: 1) show, still believe that both disciplines "do not share much common ground". The interaction between the linguistics and historical issues (including those connected to archaeology), however, is established via two points of view:

> Language, as a system and tool of communication, is a historical phenomenon. It has its own history. As the medium of thought, and that of the past and knowledge of the past, it is the channel and the most important source of historical evidence. Thus linguistics, [...] covers an area of research which supplies history with at least two kinds of data: first, linguistic information properly speaking; and secondly, evidence which might be termed supra-linguistic.
>
> (Diagne 1981: 233)

MacDonald (2003) turns our attention to the importance of historical linguistics for modeling the prehistory of Africa. Comparative linguistics, for instance, can be used to offer valuable data about the date, methods and routs of expansion for ruminant livestock of Africa during prehistoric and historic times (*cf.* Blench 1993a). However, genetic studies show that the relationship between genes and language phyla is hardly absolute (Excoffier *et al.* in MacDonald 1998: 48). MacDonald (1998) explains this by relating:

> We must realize, for example, that many original Niger-Congo speakers may now be speaking Afroasiatic languages, and *vice versa*. Thus, the cultural and linguistic realities we are attempting to classify have undoubtedly been very fluid over the expanse of time considered.
>
> (MacDonald 1998: 48)

However, the contribution of linguistics to the archaeological research is hardly new. Vansina and others (1964), for example, dealt with the subject four decades ago. This approach, according to them, is explained as follows:

(a) Comparative linguistics [...] attempts to discover and explain the similarities within vocabularies and grammatical resemblances between different languages, postulating derivations from the same 'ancestral' tongue. This ancestral language must then be reconstituted and it must be shown how the present languages derive from it [...]

(b) The analysis of common innovations is based on the principle that a new feature developed in one language and not in its sister languages will eventually be retained by certain or all of the languages which derive directly from it, and not in the languages stemming from the original sister language [...] The application of this method consists in determining the distribution of traits which occur within a set of generally related languages and in working out their pedigree. Usually it can be used only with languages which are already well known and the similarities cover only regular and consistent phonetic changes. Otherwise, one runs the risk of attributing similarities in vocabulary to a common origin, when in fact they are due to later widespread borrowings.

(c) The semantic study of reconstituted ancestral languages makes it possible to specify some features of the culture of the early groups who spoke them. But extreme caution in the use of this method is called for, since every form in the language to be reconstituted results from a comparison based on the morphological similarities between forms used in the existing languages which are held to be derived from it.

(d) [...] The semantic analysis of terms is possible and the historians can estimate, by analysing lists of borrowings, what a given culture owes to another.

(Vansina *et al.* 1964: 72-73)

Blench (1997a) also refers to the importance of historical linguistics in archaeological research. Such an importance led him to define historical linguistics and explain how linguistics predicts the proto-language forms:

> Historical linguistics may be defined as the analysis of the relationship between two or more languages that are assumed to be genetically related (that is, to 'have sprung from some common source') [...] Linguists are concerned to develop testable rules by which specific languages can be related to one another, relating to phonology, morphology and lexicon. These rules should generally be able to predict the patterns of relationship between 'new' vocabularies and thus generate a tree-like genetic structure which allows modelling of relative antiquity of splits between different languages. Proto-forms predicted by the rules that relate to two or more languages and a sequence of proto-languages can be reconstructed for nodal points in the genetic tree.
>
> (Blench 1997a: 7)

One task of historical linguistics, as Blench (1997b: 21) wrote, is to "determine the homeland of particular language phyla, to establish the geographical region in which the proto-language was spoken". MacDonald (1998), however, turns our attention to the difficulties of correlating the locations of proto-languages with the locations of their contemporary speakers.

Since the populations of West Africa, including Mauritania, represent the Niger-Congo, Nilo-Saharan and Afroasiatic language phyla (MacDonald 1998: 34), it is important to give here a brief account of these major language phyla. This brief outline, in addition to the information given in sub-section *VI.1.5* below, are also essential for attributing northern Atar engravings to the peoples who spoke/speak one or more of the co-ordinate branches of these phyla proto-phyla, and consequently placing this art within a culture-historical context.

Niger-Congo (Niger-Kordofanian):

Niger-Congo is one of the most widespread language phyla in Africa. It includes about 1,500 languages (Blench 1999: 35). The concept of Niger-Congo, as Blench (1993b: 128) states, is based on Westermann's 'Sudan-Sprachen' which suggests a strong relationship between the Bantu languages and those spoken in West Africa.

Greenberg (1981) terms this language phylum as Niger-Kordofanian. According to him, this family includes two branches: "Niger-Congo [which] covers a very considerable portion of sub-Saharan Africa including almost all of West Africa and parts of central and eastern Sudan, and its Bantu sub-branch [which] occupies most of central, East and southern Africa; [and] Kordofanian [which] is confined to limited area in the Kordofan region of Sudan" (Greenberg 1981: 302-3). This language family, however, includes six co-ordinate branches (Greenberg in Blench 1993b: 128):

- West Atlantic (Fulfulde, Wolof, Temne, *etc.*)
- Mande (Mandinka, Mende, Busa)
- Gur (Dogon, Mossi, Dagari, Bariiba, *etc.*)
- Kwa (Kru, Ewe, Akan, Yruba, Igbo, Ijo, *etc.*)
- Benue-Congo (Kamberi Birom, Jukun, Efik and Bantu)
- Adamawa-Eastern (Mumuye, Chamba, Gbaya, Zande, Banda, *etc.*)

Greenberg's classification of Niger-Kordofanian, however, has been criticised since it is unlikely that "a language family would have such a large number of co-ordinate branches –implying a single proto-language that split into six distinct groups at one time" (Blench 1993b: 138).

Nilo-Saharan:

This phylum seems to be older than Niger-Congo and Afroasiatic (Blench 1999: 43). Nilo-Saharan has six co-ordinate branches: Senghi, Saharan, Maban, Fur, Chari-Nile and Koman (Greenberg in Blench 1993b: 132).

This phylum "has always been something of the poor relative of the other principal language phyla, partly because it seems to lack coherence" (Blench 1993b: 132). Recent studies, however, have confirmed Greenberg's hypothesis as to the overall unity of Nilo-Saharan language phylum (Blench 1999: 33). Some authors, on the other hand, have proposed a deep time relationship between Nilo-Saharan and Niger-Congo. Such a relation led Gregersen to propose a proto-language 'Kongo-Saharan' and for Blench to propose 'Niger-Saharan' (Blench 1993b).

Finally, it could be useful to mention that Ehret (1993: 107) refers to Songay (Senghi) as the only branch of Eastern Sudanic which "alone is spoken far away from the other three branches [Kir-Abbaian, Astaboran and Kuliak, in areas 2000 km to the west near the great bend of the Niger river". He explains "The Songay presence far to the west is evidence that the break-up of the proto-Sahelian speech community was accomplished in part by a major expansion of people westward across what is today the Sahel and southern Sahara" (*ibid.*). However, it should be noted that there are currently no Nilo-Saharan speakers (*i.e.* Songhai) in Mauritania.

Afroasiatic:

This language phylum was previously known as 'Hamito-Semitic'. The recent term 'Afroasiatic' -which is proposed by Greenberg- replaced Semitic and also Hamitic with all of their ethno-centrism and racist undertones (Blench 1993b: 134). In addition to the several languages of major world religions that the Afroasiatic language phylum includes (*e.g.* the Hebrew, Arabic, and Aramaic), it also comprises the most ancient written languages (Blench 1999: 36). According to Greenberg's (1981) classification, the Afroasiatic phylum is divided into five co-ordinate branches: Semitic, Berber, Ancient Egyptian, Cushitic and Chadic. Another branch has been added to this phylum: Omotic, "a family confined to Ethiopia and consisting of little-known languages such as Nao, Ghimira, Hamar and Dizi" (Bender; Hayward in Blench 1993b: 134).

However, the Afroasiatic phylum is still treated in most if not all recent studies as having the following languages: North Semitic (Hebrew, Ancient Semitic languages,

Ancient Egyptian, Arabic), South and Ethio-Semitic, Berber, Chadic, Cushitic and Omotic (see Blench 1999: 38, Figure 1.6).

Blench (1999:40) presents a model which links the structure of Afroasiatic to archaeological data. According to this proposal, "Chadic and Cushitic are closely linked and [...] the Chadic speakers are in reality Cushitic pastoralists who migrated to Lake Chad along the Wadi Hawar".

The geographical classification of languages, as Diagne (1981: 234) writes, however, "leaves out of account such phenomena as migration and overlappings of people". In such cases linguists use typological and geographical denominations and groupings (see Greenberg 1981). "In recent years, numerous publications have [also] advanced the case for macrophyla; that is, the uniting of several accepted phyla into one genetic group" (Blench 1997a: 11). This led Blench & Spriggs (1999b) to discuss the place of macrophyla in the archaeological and linguistic studies and conclude that:

> Macrophyla proposals are intellectually stimulating but remain outside the mainstream [...] The contradictions between them suggest that they are more useful to stimulate discussion and further research than as serious historical proposals.
>
> (Blench & Spriggs 1999b: 22)

VI.1.5 The possible origins and prehistoric distributions of the language phyla of the Sahara and West Africa:

Here, I consider a number of arguments regarding the possible origins and prehistoric distributions of the three language phyla of the Sahara and West Africa mentioned above. In other words, this sub-section presents some possible answers for three imperative questions: Where were the proto-languages zones? Where did these proto-language phyla come from? How did they divide?

Based on knowledge of their present-day and historical distribution, Blench (1993b) has attempted to follow the possible original location of Niger-Congo, Nilo-Saharan and Afro-Asiatic. In this regard, he relates:

> Nilo-Saharan is taken to be the most ancient phylum and to have begun its expansion during the Holocene, when the northern margins of the rainforest were considerably south of their present location. The most controversial placement is centering Afroasiatic in the Ethio-Sudan borderland [based on antelope names in Afroasiatic and on the location of Omotic] If these assumptions are even broadly correct, then the centre of origin of the three principal phyla of African languages was in the same ecological zone, and roughly adjacent to one another. Niger-Congo began on the southern margins of the Sahara, Nilo-Saharan probably in the former semi-arid zone of the present-day Central African Republic, and Afro-Asiatic in the present-day Sudan/Ethiopia borderland.
>
> (Blench 1993b: 136-7)

Depending on some recent observations derived from lexical reconstruction Blench (1993b) advocates two hypotheses regarding the spreading and distribution of the language phyla under discussion and the factors that may stand behind such dispersal:

> (a) The degree of diversity in all phyla is sufficient to suggest that the principal dispersal took place before agriculture. There do not seem to be any terms unambiguously associated with agriculture that will reconstruct. However, words for some domestic animals, in particular goat and cattle, seem to reconstruct at least back to the level of Mande in Niger-Congo. Similar evidence for early exploitation of domesticated animals in the pre-agricultural phase also appears in Nilo-Saharan and Afroasiatic. (b) If the speakers of proto-languages are assumed to be hunting populations, then the second assumption would appear to be that the principal stimulus to dispersal initially was either pressure on resources or a sudden expansion of their availability. With increasing aridity, movement of game would fragment human groups following particular animal populations. When the climate improved, the expansion of both hunted and gathered resources would allow a corresponding diversification of human subsistence pattern.
>
> (Blench 1993b: 137)

MacDonald (1998) has also attempted to revise linguistic hypotheses concerning proto-language zones based on archaeological evidence. Citing the absence of likely archaeological correlates for the Nilo-Saharan and Niger-Congo proto-languages, he postulates a single North African homeland for proto-Nilo-Saharan and Niger-Congo speakers at the beginning of the Holocene.

Five years later, MacDonald (2003) gives a more comprehensive discussion concerning the linguistic homeland of the proto-language phyla of Africa. According to him, at least five major languages phyla were present in Africa at the beginning of

the Holocene (*ca.* 12000 bp): Afro-Asiatic, Nilo-Saharan, Niger-Congo, Khoisan, and at least one 'lost' [extinct] language phylum. As to the point of origin of Afro-Asiatic, he would agree with Blench (1993b) and Ehret (1993, 2002) that this language phylum may be placed either in the Levant or the eastern Sudan/Horn of Africa. He believes that Nilo-Saharan and Niger-Congo may have shared a common origin, once forming a putative macro-phylum, the 'Niger-Saharan': "Niger-Congo is a later split from the main trunk of the Niger-Saharan languages, with which it shares terms for wild, particularly riverine, resources" (*ibid.*: 96). Out of a North African homeland, Blench (1995: 98), places the probable dispersion of the putative Niger-Saharan macrophylum sometimes after the end of the 'Ogolian' hyper-arid (*ca.* 20000-12000 bp) which precluded communication between the North African littoral and 'Inner Africa' for at least eight millennia.

MacDonald (2003), then, suggests an explanatory model for the modern distribution of African language phyla. This model could proceed as follows:

> The Ogolian hyper-arid would produce propitious conditions for the production of population isolates (and accelerated language diversification) throughout North Africa in the Terminal Pleistocene, leading to the diversification of Nilo-Saharan and Niger-Congo as these populations began to re-colonize the Sahara episodically during the early Holocene pluvial (*ca.* 12000-9000 bp). In the mid to recent Holocene, with increasing aridification, Niger-Congo and Nilo-Saharan speakers would have followed water sources southwards into West and Central Africa, gradually displacing or linguistically assimilating indigenous 'Lost Language' speakers (MacDonald 1998a). At the same time, during the Holocene optimum (*ca.* 7000-6000 bp), Afro-Asiatic speakers were probably entering the Lower Nile region from the south and the east, assimilating and displacing local speakers of Nilo-Saharan and Niger-Congo language [...] Archaeological evidence indicates that, during the Ogolian hyper-arid, sub-Saharan West Africa was occupied by mobile, isolated bands of hunter-gatherers sharing a technocomplex of quartz microlithic industries (MacDonald 1997) [...] Distinctive early Holocene sub-Saharan hunter-gatherer complexes are attested archaeologically (MacDonald 1997, 1998a), most West African oral traditions still do speak of autochthonous 'little peoples' who were displaced or replaced [...], and there is compelling linguistic evidence for a sub-Saharan language 'wipe-out' during the Holocene.
>
> (MacDonald 2003: 96-98)

MacDonald (1998) thus believes that the principle ancestral populations of modern West Africans were living in North Africa at the end of the Pleistocene. According to the research carried out on modern African languages (*cf.* MacDonald 2003), these populations were not Afro-Asiatic speakers, but rather Niger-Congo and Nilo-Saharan speakers:

> [...] archaeological evidence indicates that Holocene colonists entered the Sahara from many point -including the Maghreb, Libya, and the Nile Valley- around 10000-7000 bp. Thus, [...] there must have been 'black' peoples in North Africa at the beginning of the Holocene. [Holocene colonists] displaced or integrated the autochthonous populations of Inner Africa during the course of the Holocene. [One] would be less sanguine about associating such early colonists with Afro-Asiatic speakers [...]. Indeed, in looking for southward and/or westward Afro-Asiatic language expansions into the interior of Africa we can discern only two discrete and comparatively recent prehistoric events: proto-Berber from the North African littoral into the Sahara by at least 4000 bp (or possibly a bit earlier) and proto-Chadic into the Lake Chad Basin from the Nile Basin at *ca.* 5000-4000 bp (MacDonald 1998a). Comparatively speaking then, linguistic evidence for the spread of Nilo-Saharan and Niger-Congo languages to northern and western Africa seems to be several thousand years in advance of Afro-Asiatic.
>
> (MacDonald 2003: 98)

From what has been mentioned above, we may conclude that the possible language groups which may have been present in Mauritania during the Holocene include proto-Niger-Congo (especially the Mande and Western Atlantic branches) and Afroasiatic (*e.g.* proto-Berber). These may hypothetically correlate with early fishing and herding populations in the former case, and post 4000 bp proto-Berber populations in the latter.

VI.2 Northern Atar engravings as a reflection of ancient population:

As Isichei (1997) has pointed out:

> It is clear that 'white' and 'black' peoples lived side by side, along with aquiline-featured dark people whom scholars have often identified –too facilely- with the Fulani. Presumably, the 'white' Saharans spoke proto-Berber, the 'black' proto-Mande or proto-Chadic [...] The proto-Berbers, it is assumed, migrated north, the black populations south. Some from each group remained, radically adapting their lifestyle to the demands of a desert environment –the Tuareg, close kin to the Berber, the black harratin who cultivated the desert oases under the

> Tuareg hegemony, and the black nomads of the central Sahara, linguistically and culturally akin to the Kanembu and Kanuri.
>
> (Isichei 1997: 44-5)

Such statements, in additin to the information presented in the previous sub-sections, indicate that multiple cultural/ethnic groups occupied Mauritania during the Holocene. These ancient populations had at least two points of origin which can be summarized as follows:

- the the proro-Berbers (before the first millennium BC, see above and also *VI.2.2.2.2* below)
- proto-Mande and proto-Western Atlantic groups who inhabited the southern highlands (*e.g.* Dhar Tichitt) and the Atlantic littoral prior to the first millennium BC

There also remains the possibility that some of the original populations of Mauritania belonged to the so-called lost language phyla of West Africa (MacDonald 1998). These are the languages spoken by early dispersed hunter-gatherer groups who spent the Ogolian hyper-arid south of the Sahara. Linked with the "West African microlithic technocomplex", these putative groups existed at least as far north as Mali and may have extended into Mauritania.

The question then arises ... to which group of language/proto-language speakers does the rock art of northern Atar probably belong?

From the archaeological point of view, linking the rock art corpus under investigation with proto-language group(s) may be possible if we can assign the characteristic motifs to a given "tradition". What is needed, in other words, is to compare the engravings of northern Atar with the rock art of sub-Saharan Africa (*i.e.* the rock art of both "lost languages and Mande"), on the one hand, and with that of the northern Sahara (*i.e.* known Berber rock art), on the other hand.

VI.2.1. The possible connection with sub-Saharan Malian rock art:

One possibility to be discussed here is the possible link between the rock art corpus of northern Atar and the Mande and/or "Lost Language" family. Before arguing this possibility, it is better to give here a brief account on the chronology of this corpus a description of its motifs.

This rock art from modern Mali was either created by hunter-gatherers ("lost language" speakers) or by later Mande migrants who arrived in this area sometimes in the past 5,000 years (MacDonald 1998). Better, there is considerable debate about the authorship of this southern Malian corpus. On the one hand, there are those who see a northern origin of this rock art and a Mande cultural link for the different phases of this copus (Huysecom 1990; Huysecom and others 1996; Huysecom & Marchi 1997). In this regard, Huysecom and others (1996) believe that the earliest rock art of Boucle du Baoulé, Fanfannyégèné II (west of Mali) could be correlated with an influx of Saharan populations at the beginning of the first millennium BC. Subsequent phases are thought to belong to proto-Mande or Mande colonists. On the other hand, there are others, who while not ruling out a subsequent Mande usage of its iconography, believe the origin of this corpus may be associated with indigenous early to mid-Holocene hunter-gatherers: "the lost language complex" (MacDonald 1998; Kleinitz 2001). Regardless, this rock art provides an important comparative aspect for the Atar corpus, as both of these broad groups may be implicated in the prehistory of Atar.

In 1907, Desplagnes mentioned the rock art in the central plateau of Mali; today known as the Middle Niger (Desplagnes in Huysecom & Marchi 1997). Near Bamako and in the Kita area (between Kayes and Bamako) de Zeltner (1911) was able to record both engravings and paintings in a number of caves. This corpus includes: anthropomorphic and zoomorphic engravings, schematic and geometric designs (plant forms, compartmented enclosures, scaliform signs: like ladders), and hand stencils. The colours used in painting are ochre, red, white, indigo, and black (Alimen 1957: 378). Mauny (1954) mentioned a number of rock art sites from Pays Dogon, sub-Saharan West Africa. Huysecom (1990, 1993) devoted his efforts to study the representations of Fanfannyégèné I (Boucle du Baoulé, Mali). Huysecom and

others (1996) also attempted to establish a stylistic and chronological sequence of the rock art of Fanfannyégèné II (Boucle du Baoulé, Mali). Huysecom and Marchi (1997) gave a short account of western African rock art in an attempt to establish stylistic groups taking into account clues of relative chronology. Marchi (1998) gave a short notice on sub-Saharan rock art considering the most characteristic sites of western African area (*e.g.*, Modjodjé and Airé Soroba, Mali). In her epigrammatic paper, Kleinitz (2001) also concentrated on the rock art of the Boucle du Baoulé region (Mali) trying to turn our attention to the importance of this corpus, which "deserves a place on the world rock-art map" (*ibid.* 800).

According to Marchi (1998), the rock art of sub-Saharan Africa is divided into three principal groups:

Rock art connected with Late Stone Age (Neolithic) rock shelters:

These representations, which are thought to be the earliest surviving images in Mali correspond to the Late Stone Age or 'Neolithic' (the end of the second or the beginning of the first millennium BC), they have been located in some rock shelters such as Fanfannyégèné I and II in the National Park of the Boucle du Baoulé, south-western Mali. They include eroded engravings of bovine heads, radiating circles and serpentine motifs. They are superimposed by a number of schematic paintings.

Figures of Saharan style:

The paintings and engravings of this group are located to the south (*i.e.* Airé Soroba in the Inland Delta of the Niger in Mali, Kourki in Niger, and Aribinda in Burkina Faso; the sites which are concentrated in the Sahelian savannah). They include:

1- Hunting scenes (ostrich, giraffes or antelopes) with horses (with geometrical or linear bodies) mounted by armed personages (wearing a head-dress of ostrich feathers) (in Airé Soroba, Kourki, and Aribinda)
2- "Schematic engraved carts or chariots" (only two in Tonida, Mali)
3- Painted dromedaries (three in Airé Soroba, Mali)

4- Inscriptions in Tifinagh and Arab characters (not very numerous and only known along the left bank of the river Niger)

The thematic content of this group, thus, can be compared to that of the Horse and Camel Periods of the Saharan rock art.

The oldest representations of hunting scenes as well as the painted dromedaries in Airé Soroba are thought to be date to the first millennium AD while the inscriptions in Arabic characters are dated to the 11th century AD. The engraved carts and the painted dromedaries as well as the inscriptions in Tifinagh or Arab characters are thought to mark the most southern limits for the extension of northern populations to the south.

Schematic representations related to traditional rites:

This group -which comprises only paintings and is thought to be of a relatively recent date (*e.g.* second millennium AD) - consists of schematic paintings that suggest affinities with traditional rites or ritual ceremonies (*e.g.* circumcision, initiation or wedding) of contemporary or proto-Mande people. The represented motifs include abstract signs, anthropomorphic and zoomorphic figures (*e.g.* humans mounting horses) in red, white or black. These paintings are to be found in the rock shelters of the Dogon area, in the "Point G" cave at Bamako (Mali) and also in the Marghi region (Nigeria); the sites which are concentrated in the Sahelian and Sudanese savannahs. In addition to these representations, this group includes a unique engraving of fish found at Bamako-Sotuba, near the Niger River and a number of painted boats in Airé Soroba.

Huysecom and Marchi (1997: 352-7) have further divided the western African rock art into a number of groups taking into consideration their relative chronology. According to them, these stylistic groups are (in chronological order):

Dotted engravings from the Baoulé region:

These famous engravings of Fanfannyégèné I and II, are highly eroded and considered the most ancient representations of this region. They are thought to be dated to the 'Bouclé' Neolithic (the end of the second and the beginning of the first millennium B.C.). Their name stems from the fact that they are comprised of varying densities of dots. They are used to depict bovids, giraffes (?) and patterns in the shape of flowers, snakes, and radiating circles.

Naturalistic painting in Nigeria:

They are located in the rock shelters in the region of Birnin Kudu, Bauchi, and Igbetti. They are thought to be dated to the Late Stone Age or "Neolithic". These paintings represent bovids (antelope, sheep, and goat) in addition to horses and monkeys. Human figures are also discerned in Geji. The colours used are red, white, and, less frequently, black.

Painted horses with geometrical bodies:

This stylistic group, which is classified as Arabo-Berber, has been discovered in a rock shelter in Airé Soroba, on the southern bank of Lake Débo, in the Inland Delta of the Niger. These raddish-brown horses are depicted with geometrical bodies (two triangles joined by their summits) and usually mounted by anthropomorphic figures armed with spears and shields. The heads of the horsemen are sometimes ornamented with ostrich feathers (?). These paintings usually occurred within scenes of hunting giraffes or ostriches.

Painted horses with linear bodies:

From the stylistic point of view, the images of this group, which are to be found in Mali (Airé Soroba, Niodougou, Point G, and Fanfannyégèné II), Burkina Faso (Nabruk and Aribinda), south of the Niger (Kourki), and north of Togo (Nambouanga), seem to be homogenous. In the case of Airé Soroba and Fanfannyégèné II, these horses of linear bodies superimpose the motifs of other facies

(*i.e.* the geometrical horses and the dotted engravings) while both Tifinagh and Arabic inscriptions are superimposed upon them. Some of these simplified or linear horse depictions, though rare, are engraved. Armed riders (with spears and shields) are presented either sitting or standing on the horses in hunting scenes (giraffes and antelopes).

Painted dromedaries:

Only three are located at Airé Soroba and post-date the painted horses with geometrical bodies. The dromedaries are painted in red and brown and shown in profile; two of them are being driven by anthropomorphs.

Engravings of carts or chariots:

In addition to those found at Airé Soroba, two highly stylised carts to be found in Tonida (Mali). They are hauled by unidentifiable quadrupeds.

The Manding paintings:

These paintings are to be found in two main regions: the Mont Manding and the Bandiagara escarpment. Such paintings are also found in northern Mali (Sourkoundingueyé site) and in southern Burkina Faso (Nabruk and Yorbi sites). These highly schematic geometrical representations are painted in red, white, or black. They include abstract signs, isolated anthropomorphs, and zoomorphs (saurian reptilian motifs).

Tifinagh inscriptions:

Generally speaking Tifinagh inscriptions (painted in a reddish-orange colour or engraved) are concentrated in the north (the Saharan and Sahelian zones of Mali and Niger) and are often situated along the left bank of the river Niger. In the Airé Soroba (Mali), for instance, they superimpose on the painted horses with geometrical bodies. They could be dated to the arrival of Tuareg camel-riding populations in the 8th century A.D.

Arabic inscriptions:

These are sparse south of the Sahara. In Diara (Mali) only one Arabic inscription has been found, and a number of painting in Airé Soroba. The latter (recording a pilgrimage to Mecca) refers to the 11th century A.D.

Schematic paintings of Marghi Country, Nigeria:

These red or white finger paintings were found in traditional context, still present today in Marghi country, eastern Nigeria. Themes include men armed with shields (also on a horse and with various quadrupeds).

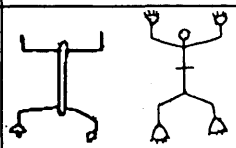
From the foregoing classifications, it is possible to infer a number of general remarks regarding these "southern motifs". First, most of the sub-Saharan rock is represented by paintings. The engravings, which are thought to date to the 'Baoulé's Neolithic facies', are relatively scarce and limited to one particular area (the Baoulé region). These engravings, which are "covered in dots whose points of impact are more or less dense" (Huysecom & Marchi 1997: 353), seem to be not only unique in the sub-Saharan rock art but also absent in the Saharan rock art. Second, horse depictions (which are usually painted and appear within hunting scenes: hunting giraffes, antelopes, and/or ostrich) are frequent in both Saharan and sub-Saharan rock art. However, apart from the few cart engravings found at Airé Soroba (the Inland Delta of the Niger, Mali) and the two at Tonida (northern Mali)- cart or "chariot" depictions are completely absent in the southernmost rock art sites of the sub-Saharan Africa. Third, except for those of Airé Soroba (in the north of Mali) and Fanfannyégèné II, Tifinagh inscriptions are completely absent in rock art sites of sub-Saharan Mali. Arabic inscriptions are also rare; only a very few are found at three sites (Diara and Airé Soroba to the north of the Inland Niger Delta,e and Fanfannyégèné II in southwestern Mali).

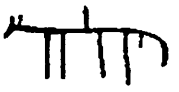
VI.2.1.1 Comparisons:

To argue whether or not the engravings of northern Atar have affinities with the "southern motifs" discussed above, we compare in this sub-section the motifs of the two rock art corpora.

a) Anthropomorphic figures:

No human representations are depicted among the motifs of Foum Chor and Ahel-Ebdemmed sites in northern Atar. However, a comparison can be made between the anthropomorphic figures recorded at nearby sites in the Adrar plateau and elsewhere in Mauritanian Sahara, on the one hand, and sub-Saharan Mali, on the other.

Sub-Saharan Mali	**Mauritania**
 "personnage a tête rond" Fanfannyégèné I (Huysecom 1990: Fig. 76.7)	 Tagant (Monod 1938: Fig. 2.9)
 "grand personnage" Fanfannyégèné I (Huysecom 1990: Fig 79.24)	 Amder, Adrar (Monod 1938: Figs. 7.20, 22)
 "grand personnage" Fanfannyégèné I (Huysecom 1990: Fig 79.28)	 El Rhallaouiya, Adrar (Vernet 1996: Fig. 7 no 141)
 "Stick figure" Fanfannyégèné II (Huysecom *et al.* 1996: Fig 6)	 El Rhallaouiya, Adrar (Vernet: 1996: Fig. 13 no 171)
 "Stick figure" Fanfannyégèné II (Huysecom *et al.* 1996: Fig 6)	 Dhar Tichitt (Holl 1986: Fig. 86)

 "Stick figure" Fanfannyégèné II (Huysecom *et al.* 1996: 56, Fig 5)	 Aguentour El-Abiod (Tegdaoust) (Mauny 1970a: Fig. 2)
 "Stick figure" Fanfannyégèné II (Huysecom *et al.* 1996: Fig 7)	 El Rhallaouiya, Adrar (Vernet: 1996: Fig. 7 no 86)
 *"Stick figure"* Fanfannyégèné II (Huysecom *et al.* 196: Fig 7)	 El Beyyed II (Monod 1938: Fig. 25.409)
 *"Protruding figures"* Fanfannyégèné Donsoma (Kleinitz 2001: Fig 3)	 El Rhallaouiya, Adrar (Vernet: 1993: 146)
 *"Stick figure"* Modjodjé (Pays Dogon) (Marchi 1998)	 Chebka (Vernet 1993: 145)
 *"Stick figure"* Songo (Pays Dogon) (Mauny 1954: Photo. 7)	
 *"Schemati figure"* Airé Soroba (Huysecom *et al.* 1996: Fig.11.II)	

(Table 12)

Stylistic comparison between some anthropomorphic representations in both Mauritanian and sub-Saharan rock art

As stated by a number of authors (*cf.* Gallay 1964; Huysecom 1990, 1993; Huysecom *et al.* 1996; MacDonald 1998; Kleinitz 2001), the anthropomorphic figures in the rock art of West and Central Africa (south of the Sahara) are usually depicted in a very schematic style (*i.e.* in 'stick figures'). This "geometric" style can be recognised

in rock art from the upper Niger to the Democratic Republic of Congo (MacDonald 1998: 47).

Among those of Fanfannyégèné I, we can find what Huysecom (1990) calls the "*grand personages*" (see Table 12 above). They are painted either in broken red-brown, or white, or a combination of both. The most notable component is made up of two schematised characters of 60 and 40 cm height respectively, painted with the aid of lines and dots. Both show round faces, centred by some points of colour; the larger of the two, showing two stumps of arms with 5 spread fingers, is topped by a motif in the form of a "crown". Another anthropomorphic figure with a round head and of 35 cm height is represented; it recalls the "*grand personages*", but is more schematised (*ibid.* 54).

Those of Fanfannyégèné II are painted in red or in black. The red ones include three figures; two are of a relatively large size (between 25cm and 35cm) and executed in a stick manner while the third represents a rider oriented towards the east, holding his horse by the bridle. The black paintings, on the contrary, are often smaller (27 cm maximum) and executed in fine lines of charcoal. They also show less care of execution compared with the red painting already mentioned (Huysecom *et al.* 1996: 58).

At Fanfannyégèné II, there are also two white or yellowish paintings. As shown in Table 13 below, they are essentially geometric. The first consists of a line ending with a point and cutting with multiple lateral appendices. The second is of the same type, measuring more than 50 cm in height, shows two round extremities and multiple barbs. In its upper part is found a blackish zone, covered in soot, which seems to have been rubbed repeatedly with fingers. These two figures, which probably form single compositions and are placed at the deepest part of the shelter, are thought to represent symbols used for religious practises (*ibid.*).

Fanfannyégèné II

(Huysecom *et al.* 1996: Fig 5)

Fanfannyégèné II

(Huysecom *et al.* 1996: Fig. 6)

(Table 13)

Painted (religious) symbols of Fanfannyégèné II

As to the anthropomorphic figures of the Mauritanian corpus, they are also usually depicted in schematic style (for some examples, see Table 12, and also Chapter 1). The oldest are thought to be those of Bir Moghrein further north (Vernet 1993: 144). Human figures are also depicted in El Rhallaouiya in the north central part (Vernet 1996) as well as in the Tagant (Monod 1938) and in the Tichitt to the south (Holl 2002).

These schematic anthropomorphic motifs are varied: they include hunters, masked men with horned heads, rare ithyphallic or naked figures, armed men with different types of weapons (bows arrows, shields, and spears), fighting scenes, cattle herders, horse and camel riders, and family scenes with children and adults holding each other's hands. Some of these representations also show different types of clothes, hairstyles and ornaments (Vernet 1993: 144-5).

Regardless of the fact that human figures are completely absent at Foum Chor and Ahel-Ebdemmed, it is important to note that the anthropomorphic motifs of sub-Saharan Mali are usually depicted in a "stick figure" and show few morphological similarities with those of the Mauritanian corpus. It is, for instance, difficult, if not impossible, to find figures similar to the Boulé "*grand personages*" among the

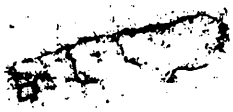
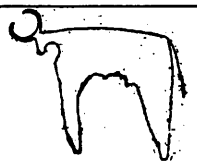
anthropomorphic motifs of the Mauritanian corpus. Furthermore, the southern motifs which are thought to present symbols used for religious practises (see above) are not only absent among the recorded motifs of northern Atar but are also incomparable in the Mauritanian rock art as a whole (for more examples of the anthropomorphic motifs in the Mauritanian rock art, see Monod 1938). This, therefore, gives the indication that we are confronted with two inventive manners or cultural traditions and/or ideologies that do not affiliate to each other.

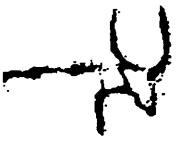
b) Zoomorphic motif:

For the purpose of this study, zoomorphic motifs will be divided into the following categories:

b.1) Cattle depiction:

The following table gives a stylistic comparison between the engraved (dotted) cattle of the Baoulé region (*e.g.* Fanfannyégèné II) in southern Mali and those recorded at Foum Chor:

Sub-Saharan Mali	**Northern Atar (Mauritanian Adrar)**
 Fanfannyégèné II (Huysecom *et al.* 1996: Figs 8/9)	 Foum Chor (Fig. 53a.1)
 Fanfannyégèné II (Huysecom & Marchi 1997: Fig 37)	 Foum Chor (Fig. 53a.4)
 Fanfannyégèné II (Huysecom & Marchi 1997: Fig 37)	 Foum Chor (Fig. 53a.5)

	Fanfannyégèné II (Huysecom & Marchi 1997: Fig 37)		Foum Chor (Fig. 53a.6)
	Fanfannyégèné II (Huysecom & Marchi 1997: Fig 37)		Foum Chor (Fig. 53a.8)

(Table 14)

Stylistic comparison of cattle representations of Fanfannyégèné II (the Baoulé region, southern Mali) and Foum Chor (northern Atar, Mauritanian Adrar)

The question that arises now is: Do the bovid engravings of southern Mali present an extension of those of the Sahara (including the study area)?

The cattle depictions of Fanfannyégèné I and II are classified as '*corniforms*'. Their engravings are simplified; the head, the horns, and sometimes the ears are shown. In one case, a complete figure of a bovid is illustrated in profile with its head facing forward (Huysecom & Marchi 1997: 353). From the above table and the description given in Chapter 4 (*II.1.4.1.1.2*) it is possible to make a number of observations.

First, from the technical point of view, though they are also executed by employing a pecking technique, none of Foum Chor cattle depictions show this variety of pecked dots. Even in the southern sites of the Mauritanian Sahara (*e.g.* in Dhar Tichitt) nothing has been recorded or even reported so far comparable to the dotted bovids (*corniforms*) of sub-Saharan Mali (see, for instance, Monod 1938; Holl 2002). Second, the cattle of Foum Chor as well as those of the other parts of Mauritania are shown in outline; a perspective that seems deficient among the engraved bovids of Fanfannyégèné. Third, the cattle of Fanfannyégèné are depicted in schematic style and they comprise a single complete bovid while the rest are represented by only the head of the animal. On the contrary, and apart from the eroded figures and/or the cases of superimposition, the cattle of Foum Chor are complete and in many cases

they show more specific details (*e.g.* eyes, sexual organs, and coat pattern). Fourth, the abstract signs and geometric motifs occurring on the same rocks/walls where the cattle of the two corpora are depicted reflect major differences: in the case of Fanfannyégèné II, the geometric motifs are composed of a small circle, to which are added straight external rays (recalling a 'solar' motif), of which the extremities -in other cases- might be joined in groups of two (recalling a 'floral' motif), or linked together by a bigger circle (resembling a representation of 'wheel'). In addition to the radiant motifs, there are also serpentine forms which are formed by an undulating line, of which one extremity ends with a loop (Huysecom *et al.* 1996: 56-7). In Fanfannyégèné I (Huysecom 1990) and Fanfannyégèné II (Huysecom *et al.* 1996), there is also a series of indeterminate figures which comprise some indistinct geometric signs of different levels of abstraction. As to the engraved signs and geometric motifs occurred along with the represented cattle of Foum Chor, though they are numerous and vary, they have different characters and, in any case, are dissimilar to those of Fanfannyégèné II. The following table is to show the difference between the abstract signs and/or geometric motifs of the two sites:

Fanfannyégèné II	**Foum Chor**
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 8)	 Foum Chor (Figs. 53b: 8, 11, 22, 23, 30, 50 and 74)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 8)	 Foum Chor (Figs. 53b: 17, 24, 25, 26, 27, 47, 52, 70, 72 and 75)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 8)	 Foum Chor (Figs. 53b: 71 and 73)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig.8)	 Foum Chor (Figs. 53b: 32, 33, 48, 49, 51, 60, 69 and 76)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 9.2)	 Foum Chor (Fig. 53b.14)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 9.2)	 Foum Chor (Fig. 53b.77)

 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 9.2)	 Foum Chor (Fig. 53b: 12, 29, 31 and 34)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 9.3)	Foum Chor (Fig. 53b: 13 and 16)
	 Foum Chor (Fig. 53b.15)
	 Foum Chor (Fig. 53b.18)
	 Foum Chor (Fig. 53b.67)
	 Foum Chor (Fig. 53b.78)

(Table 15)

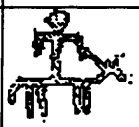
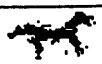
The types of abstract signs and geometric motifs occurred along with cattle representations of Fanfannyégèné II and Foum Chor

The differences between the bovids of Foum Chor and those of southern Mali are evident. Indeed, the obvious dissimilarities between cattle motifs of the two corpora seem to stand against the hypothesis that the engraved (dotted) cattle of the Baoulé region (Fanfannyégèné I and II) in southern Mali provoke "certain Saharan representations". In effect, the represented cattle of the two corpora show different techniques, forms, and styles. Accordingly, we may unambiguously claim that the two corpora have no affinities and, consequently, probably belong to either temporally or culturally unrelated groups of pastoralists. More specifically, it seems difficult to establish a link between the cattle engravings of Foum Chor (northern Atar, Mauritanian Adrar) and the bovid representations of "lost languages and/or Mande".

b.2) Equids:

Equids are represented in the two rock art corpora under comparison. However, those of sub-Saharan Mali are generally painted rather than engraved. In Fanfannyégèné II, a number of painted horses are recorded. They are shown either in red or in black. The

first category includes only one which is mounted by a personage holding the bridle. The horse is depicted in profile, but the rider from frontal perspective. The second category is represented by six horses painted in black with less care than the red horse; all of them are mounted by riders (Huysecom *et al.* 1996: 58). Examples of these painted horses are given in the following table which also includes a number of the engraved equids recorded at both Foum Chor and Ahel-Ebdemmed.

Northern Atar (Mauritanian Adrar)	**Sub-Saharan Mali**
 Foum Chor (Fig. 53a.10)	 Fanfannyégèné II (Huysecom *et al.* 1996: Fig 7)
 Foum Chor (Fig. 53a.16)	 Fanfannyégèné II (Huysecom *et al.* 1996: Fig 7)
 Ahel-Ebdemmed (Fig. 97a.4)	 Airé Soroba (Huysecom *et al.* 1996: Fig 11.11)
 Ahel-Ebdemmed (Fig. 97a.9)	 Airé Soroba (Marchi 1998)
 Ahel-Ebdemmed (Fig. 97a.13)	 Airé Soroba (Marchi 1998)
 Ahel-Ebdemmed (Fig. 97a.14)	
 Ahel-Ebdemmed (Fig. 97a.16)	

 Ahel-Ebdemmed (Fig. 97a.18)	
 Ahel-Ebdemmed (Fig. 97a.20)	
 Ahel-Ebdemmed (Fig. 97a.22)	
 Ahel-Ebdemmed (Fig. 97a.23)	

(Table 16)

Stylistic comparision between the engraved equids of northern Atar (Mauritanian Adrar) and the painted horses of sub-Saharan Mali

From the artistic point of view, the equids of northern Atar and those of Fanfannyégèné II belong to different art forms (*i.e.* engraving vs. painting). This, however, does not prevent us from examining the other aspects that may reveal whether or not the two corpora are connected to each other. Comparing the style and form could offer the opportunity to deduce the similarities/dissimilarities that enable us to reach a conclusion in this regard.

From the stylistic point of view, we can easily discern very simplified and schematic horses at Fanfannyégèné II. All of the painted horses whether in red or in black- are shown with linear bodies. One of the two engraved equids of Foum Chor (Fig. 53a.16) is also executed in the same manner. At Ahel-Ebdemmed, only three out of the twenty-two engraved equids are probably depicted with linear bodies (Figs.79a: 13, 14 and 20). However, these three equids do not resemble the painted ones of Fanfannyégèné II; their heads and necks are carried higher and two of them (Figs. 97a. 13 and 14) show only two legs (those of Fanfannyégèné II show four). Even the third one (97a.20) seems to be depicted in a relatively lively stance (those of

Fanfannyégèné II are noticeably static). What is also remarkable is that all the painted horses of Fanfannyégèné II are mounted by riders or personages while no equids of northern Atar (Foum Chor and Ahel-Ebdemmed) are mounted.

In addition to what has already been said above, noteworthy is that painted horses with geometrical bodies can be found not only in the rock art of sub-Saharan Mali but also in the Mauritanian corpus as well. Those of El Berbera in the Mauritanian Adrar to the north (Monod 1938: Fig. 19.273), of the Rkiz massif (Richir 1970: Figs. 9, 10 and 11), and of the Taganat to the south (Mauny 1954: Fig. 9), for instance, can be comparable to those of Airé Soroba (the Inland Delta of the Niger) and Adrar des Iforas (north of Mali). Similarly, the painted horses with linear bodies are also known among the rock art motifs of both sub-Saharan Mali (see above) and the Mauritania. In the latter case, they are recorded in the northern sites (*e.g.* El Rhallaouiya see Vernet 1996) and in the most southern sites as well (*e.g.* Aioun el Atrous, see Monod 1938: 84, Fig. 82.E). However, it is dangerous to rely upon the painted horses with linear bodies to suggest a link between the Mauritanian rock art and that of the sub-Saharan Mali. Indeed, the painted (as well as the engraved) horses with linear bodies constitute one of the most common motifs depicted in both Saharan and Sub-Saharan rock art corpora. This style is to be found, for example, in Lower Nubia and Upper Egypt (Dunbar 1941; Winkler 1938), in the Eastern Egyptian Desert (Hoobs & Goodman 1995), in the Libyan and Algerian Sahara (Lhote 1961; Mori; 1998; Muzzolini 1995a, 1995b, 1997), in southern Morocco (Alaoui & Searight 1997), in the Anti-Atlas (Pichler 1999), in the Western Sahara (Nowak & Ortner 1975), in Ennedi (Bailloud 1997), and in the Upper Volta (Borkina Faso) (Ki-Zerbo 1981).

As to the abstract signs and/or geometric motifs which occur on the same area of the engraved or painted equids, it is useful to show an additional table:

Northern Atar	Fanfannyégèné II
 Ahel-Ebdemmed (Fig. 97b: 1)	 (Huysecom *et al.* 1996: Fig. 7)
 Ahel-Ebdemmed (Fig. 97b: 2)	 (Huysecom *et al.* 1996: Fig. 7)
 Ahel-Ebdemmed (Fig. 97b: 3)	 (Huysecom *et al.* 1996: Fig. 7)
 Ahel-Ebdemmed (Fig. 97b: 4)	 (Huysecom *et al.* 1996: Fig. 7)
 Ahel-Ebdemmed (Fig. 97b: 5)	 (Huysecom *et al.* 1996: Fig. 7)
 Ahel-Ebdemmed (Fig. 97b: 6)	
 Ahel-Ebdemmed (Fig. 79b.7)	
 Ahel-Ebdemmed (Fig. 79b.8)	
 Ahel-Ebdemmed (Fig. 79.9)	
 Ahel-Ebdemmed (Fig. 79b.10)	
 Ahel-Ebdemmed (Fig. 79b.11)	
 Ahel-Ebdemmed (Fig. 79b.12)	
 Ahel-Ebdemmed (Fig. 79b.13)	

 Ahel-Ebdemmed (Fig. 79b: 14)	
 Ahel-Ebdemmed (Fig. 79b: 15)	
 Ahel-Ebdemmed (Fig. 79b: 16)	
 Ahel-Ebdemmed (Fig. 79b: 17)	
 Ahel-Ebdemmed (Fig. 79b: 18)	
 Ahel-Ebdemmed (Fig. 79b.19)	

(Table 17)

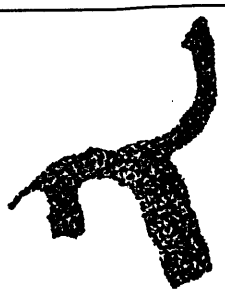
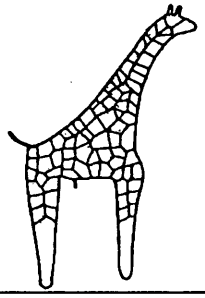
Types of abstract signs and geometric motifs occurring with equid representations of northern Atar and Fanfannyégèné II

The above table demonstrates that the abstract signs and/or geometric motifs occurred on the same rock along with these equids are completely different from one corpus to another. The characters of those of northern Atar seem to be more homogenous. They are probably based on principles of geometry and symmetry; with some exceptions, these signs can be deduced from the inside of a square divided into eight parts. Those of Fanfannyégèné II appear to be less coherent and do not follow ordinary or systematic rules (*i.e.* they consist of single or multiple of dots, grids, crossed or attached double lines, or joined circles).

The dissimilarities in both equid representations and the geometric motifs of northern Atar and sub-Saharan Mali show that we are confronted with two different artistic traditions. It is unlikely therefore to attribute all these equids to a single people; they seem to be linked with two different cultural/linguistic groups of equestrian population.

b.3) Giraffes:

As previously mentioned, giraffes are not among the recorded motifs of northern Atar. However, they are frequently present in the Mauritanian rock art. They are to be found in the Adrar to the north (*cf.* Vernet: 1993, 1996) as well as in Bled Initi in Dhar Tichitt to the south (*cf.* Holl: 2002). Nevertheless, no dotted giraffe representations similar to those of Fanfannyégèné I and Fanfannyégèné II have been reported from Mauritania so far. The following table gives an example of such a stylistic difference between the giraffe motifs of the two corpora.

Sub-Saharan Mali	**Mauritanian Adrar**
 Fanfannyégèné I (Huysecom 1990: Fig. 83.54)	 El Beyyed II (Monod 1938: Fig. 27.503)

(Table 18)

Stylistic comparison between giraffe motifs of Sub-Saharan Mali and Mauritanian Adrar

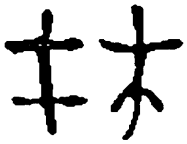
The two giraffes presented here reveal a number of significant differences. One variation is the dissimilarity in the way that the artists used to depict the patches covering the body: the patches of the first giraffe are represented by a number of dots whereas those of El Beyyed's are geometrical and constitute a network of bands. In addition, those of El Beyyed show that the artist paid much care to illustrate some details such as the ears or the horns of the animal. This type of giraffe representation is to be found not only in El Beyyed (Monod 1938; Vernet 1996) but also elsewhere in the Mauritanian Sahara: that is to say in Tarf-ech-Cherif in Rkiz massif (Mauny 1970a) and Dhar Tichitt (Holl 2002). The same type of giraffe representation is known from rock art sites in the Air, Niger (Roset 1986) and Adrar des Iforas, northern Mali (Dupuy 1995). Another difference is that the giraffe of Fanfannyégèné I

is characterized by front legs seeming longer than the back ones (Huysecom 1990: 53) while the legs of the El Beyyed's show relatively the same length.

b.4) Saurian motifs:

While they are completely absent in the northern Atar engravings, saurian motifs are among the most characteristic and remarkable images that typify the rock art of sub-Saharan Mali. For example, they are to be found at Fanfannyégèné I (Huysecom 1990), at Point G (Szumowski 1953), and at Songo in Pays Dogon (Mauny 1954, 1970b). The schematic forms of Fanfannyégèné I are painted in a colour now pale to grey, and are quite often washed out. The most distinctive motifs are made up of a wide line, always vertical and of a height varying between 50 and 90 cm, to which are add, on two sides, two "appendages". Several variants according to whether the extremities of the legs are rounded, fingered or folded can be observed (Huysecom 1990: 53).

However, only three motifs among the thousands published in Monod's (1938) catalogue of Mauritanian rock art may be identified as saurian motifs. They are included in the table below.

Sub-Saharan Mali	**Mauritania**
 Fanfannyégèné I (Huysecom 1990: Fig 77.12)	 El Beyyed II (Monod 1938: Figs. 24: 381-2)
 Fanfannyégèné I (Huysecom 1990: Fig 77.13)	 Tagant (Monod 1938: Fig. 2.10)

 Fanfannyégèné I (Huysecom 1990: Fig 77.15)	
 Fanfannyégèné I (Huysecom 1990: Fig 78.17)	
 Fanfannyégèné I (Huysecom 1990: Fig 79.34)	
 Songo, Pays Dogon (Mauny 1970b: 261)	
 Songo, Pays Dogon (Mauny 1954: Photo 7)	

(Table 19)

Stylistic comparison of the saurian motifs of Sub-Saharan Mali and Mauritania

The three saurian motifs of the Mauritanian corpus show significant similarities to those of the sub-Saharan corpus; the design of body, the shape of the head as well as the orientation of the represented figures are comparable. The similarities of such points, however, can be explained in light of the fact that the uniformity of saurian motifs is great in world rock art. Given the great scarcity of such motifs in Mauritania, it seems the 'centre of gravity' for this motif is in the south rather than in Mauritania. Since the saurian motifs are completely absent among the representations of northern Atar and hardly any in the Mauritanian rock art, while they dominate most of the scenes of the Malian sub-Saharan corpus (see, for instance, Huysecom 1990: Figs. 75: b, c, and d; 77; 78.15; and 79) - such a frequency, then, indicates some possible communication between these zones, but nothing to suggest a common tradition.

c) Cart or chariot motifs:

The engraved carts of Tonida and Airé Soroba (Mali) can be compared with those of the Mauritanian Adrar (Huysecom & Marchi 1997). On the other hand, since the representations of chariots are otherwise absent in the rock art of southern Mali, it seems reasonable to downplay any link between southern populations and "northern chariotry". In other words, the virtual absence of cart or chariot motifs in southern Mali gives the indication that the population of the north, which is represented by chariot/cart depictions in the Mauritanian Adrar and the surrounding areas (*e.g.* Tirs Zemmour, Seguit el Hamra), did not approach the southernmost areas of sub-Saharan Africa.

At this point, some may claim that horses are depicted among the motifs of the two corpora under discussion. However, the represented equids of the two corpora, as mentioned before, show significant differences that do not allow us to suggest a link between these northern and southern equestrian motifs.

d) Abstract signs and geometric motifs:

199 abstract signs and geometric motifs were distributed on the four faces of the rock of Foum Chor presenting at least 54 different characters (Fig. 53b). There are also 19 signs representing 7 characters at Ahel-Ebdemmed site (Fig. 96b). Apart from those occurred along with the zoomorphic (cattle and horse) motifs discussed above, we compare here the rest of these abstract signs and geometric motifs with those of sub-Saharan Mali.

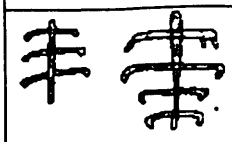
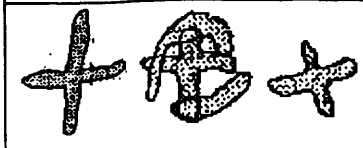
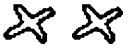
While those of northern Atar are engraved most of sub-Saharan Mali are painted in red, black, or, in very few cases, white. Only a very small number of these forms can be comparable. The following is an attempt to group those of (a relatively) similar character:

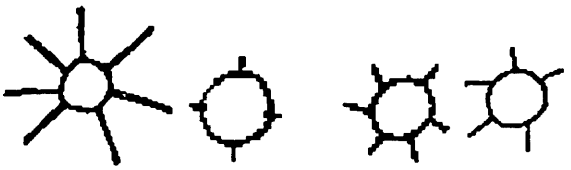
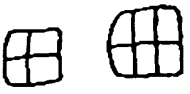
Sub-Saharan Mali	Northern Atar (Mauritanian Adrar)
 Fanfannyégèné I (Huysecom 1990: 78.15)	 Foum Chor (Figs. 28a: 46 and 32a.21)
 Fanfannyégèné I (Huysecom 1990: 79.22)	 Foum Chor (Figs. 31a: 15 and 16)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 7)	 Foum Chor (Fig.53b.53)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 9.4)	 Foum Chor (Figs. 22a.3; 28a.24)

(Table 20)

Similarities between the abstract signs and geometric motifs of sub-Saharan Mali and northern Atar rock art

In addition to what is mentioned here, it is also possible to assign a number of similarities if we compare the abstract signs and geometric motifs of sub-Saharan Mali with those of the other Mauritanian rock art sites, as we can see in the following table:

Sub-Saharan Mali	Mauritania
 Boudofo, Kita Massif (Huysecom *et al.* 1996: Figs. 11: 1 and 2)	 Taoujafet, Tgant (Monod 1938: Fig. 69.1591)
 Fanfannyégèné I (Huysecom 1990: 81.40)	 Zig, Aouker (Monod 1938: Fig. 80.1793)
 Fanfannyégèné I (Huysecom 1990: 79: 30, 33 and 35)	 Ilij (Adrar) and Aouinet Saba (Tagant) (Monod 1938: Figs: 40.964 and 14.209)

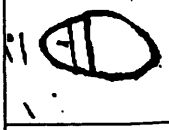
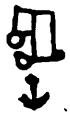
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 9.2)	 El Berbera, El Beyyed II and III (Adrar) (Monod 1938: Figs. 21.295; 26: 467 and 468; 31.604)
 Fanfannyégèné Siguifri (Kleinitz 2001: 799, Fig. 1)  Modjodjé, Pays Dogon (Marchi 1998)	 Makhrouga (Tagant). (Monod 1938: Fig. 57.1424);  El Beyyed III (Adrar), (Monod 1938: Figs. 31: 598-9)  Agueni (northern Adrar), (Monod 1938: Figs. 5.4)

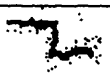
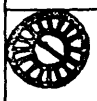
(Table 21)

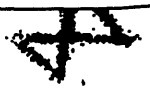
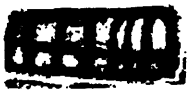
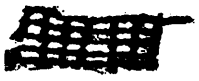
Similarities between abstract signs and geometric motifs of sub-Saharan Mali and Mauritanian rock art

However, abstract signs and geometric motifs which have dissimilar characters are more numerous. The major differences between the general run of motifs can be discerned in the following table:

Sub-Saharan Mali	**Northern Atar (Mauritanian Adrar)**
 Fanfannyégèné I (Huysecom 1990: 76.1)	 Foum Chor (Fig. 16a.5)
 Fanfannyégèné I (Huysecom 1990: 76.2)	 Foum Chor (Figs. 31a.24; 32a.5 and 53b.5)

	Fanfannyégèné I (Huysecom 1990: 76.3)		Foum Chor (Fig. 16a.7)
	Fanfannyégèné I (Huysecom 1990: 76.4)		Foum Chor (Fig. 16a.8)
	Fanfannyégèné I (Huysecom 1990: 76.5)		Foum Chor (Fig. 31a. 8)
	Fanfannyégèné I (Huysecom 1990: 76.6)		Foum Chor (Figs. 31a: 11, 12, 15 and 16; 32a: 13 and 20)
	Fanfannyégèné I (Huysecom 1990: 77.9)		Foum Chor (Figs. 32a: 3 and 18)
	Fanfannyégèné I (Huysecom 1990: 78.20)		Foum Chor (Figs. 31a.6; 32a.10)
	Fanfannyégèné I (Huysecom 1990: 78.21)		Foum Chor (Fig. 31a.13)
	Fanfannyégèné I (Huysecom 1990: 79.22)		Foum Chor (Fig. 31a.21)
	Fanfannyégèné I (Huysecom 1990: 79.26)		Foum Chor (Fig. 31. 22)
	Fanfannyégèné I (Huysecom 1990: 81.38)		Foum Chor (Fig. 53b.57)
	Fanfannyégèné I (Huysecom 1990: 81.40)		Foum Chor (Fig. 53b.58)
	Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 7)		Foum Chor (Fig. 53b.59)

 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 7)	 Foum Chor (Figs. 31a.14 and 53b.62)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 7)	 Foum Chor (Fig. 53b.80)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 7)	 Foum Chor (Fig.53b.81)
 Fanfannyégèné II (Huysecom *et al.* 1996: Fig. 8)	 Foum Chor (Fig.53b.82)
 Fodebougou ,Kita Massif (Huysecom *et al.* 1996: Fig. 11.3)	 Foum Chor (Fig. 53b.83)
 Fodebougou, Kita Massif (Huysecom *et al.* 1996: Fig. 11.3)	 Foum Chor (Fig. 53b.84)
 Boudofo, Kita Massif (Huysecom *et al.* 1996: Fig. 11.3)	 Foum Chor (Fig. 53b.93)
 Boudofo, Kita Massif (Huysecom *et al.* 1996: Fig. 11.1)	 Foum Chor (Fig. 53b.94)
 Fanfannyégèné Siguifri (Kleinitz 2001: Fig. 1)	 Foum Chor (Fig. 31a.23)
 Fanfannyégèné Siguifri (Kleinitz 2001: Fig. 1)	 Foum Chor (Figs. 28a: 3, 35 and 31a.2)
 Fanfannyégèné Siguifri (Kleinitz 2001: Fig. 1)	 Foum Chor (Fig. 31a.4)

 Fanfannyégèné Siguifri (Kleinitz 2001: Fig. 1)	 Foum Chor (Fig. 31a.18)
 Fanfannyégèné Siguifri (Kleinitz 2001: Fig. 1)	 Foum Chor (Fig. 32a.7)
 Fanfannyégèné Siguifri (Kleinitz 2001: Fig. 1)	 Foum Chor (Fig. 32a.9)
 Fanfannyégèné Siguifri (Kleinitz 2001: Fig. 1)	 Foum Chor (Fig. 31a.17)
 Mogoyabougou Fanfanba (Kleinitz 2001: Fig. 2)	 Foum Chor and Ahel Ebdemmed (Figs. 28a.46; 32a: 16 and 21; 97b.13)
 Mogoyabougou Fanfanba (Kleinitz 2001: Fig. 2)	 Foum Chor (Fig. 28a.8)
 Modjodjé, Pays Dogon (Marchi 1998)	 Foum Chor (Fig. 28a.24)
 Modjodjé (Pays Dogon) (Marchi 1998)	 Foum Chor (Fig. 28a.43)
 Songo, Pays Dogon (Mauny 1954: Photo 7)	 Foum Chor (Figs. 28a.54; 32a.12)
 Songo, Pays Dogon (Mauny 1954: Photo 7)	 Foum Chor (Fig. 28a.51)

 Songo, Pays Dogon (Mauny 1954: Photo 7)	 Foum Chor (Fig. 28a.28)
 Songo, Pays Dogon (Mauny 1954: Photo 7)	 Foum Chor (Fig. 28a.21)
 Songo, Pays Dogon (Mauny 1970b: 261)	

(Table 22)

The major differences between the characters of abstract signs and geometric motifs of sub-Saharan Mali and Mauritanian rock art

From Tables 20, 21 and 22 given above it is possible to make two general remarks. The first is that some striking similarities can be noted between the abstract signs and/or geometric motifs of the northern Atar and those of sub-Saharan Mali. Yet, these similarities remain quantitatevely insignificant or insufficient to establish a link between the two corpora. The majority of these signs and geometric motifs show different characteristics; these major differences do not allow us to affiliate the abstract signs and geometric motifs of the two corpora to each other. These differences again put us in mind of the comments made earlier regarding saurian motifs: while there appears to be evidence of contact with an even the occasional presence of sub-Saharan populations, the overwhelming impression is of a distinct northern Mauritanian tradition.

e) Inscriptions in different characters:

This category is classified here to include Tifinagh and Arab inscriptions. The Tifinagh can be seen as these short vertical and/or horizontal lines of the characters that are based upon principles of geometry and symmetry which are thought to be derived from the Libyan alphabet or the ancient Libyco-Berber script-system (Pichler 1996: 104; for a comparison between the characters of Libyco-Berber and Tifinagh, see Tables 31, 32, 33 below, and also Fig. 1.13, Brett & Fentress 1996: 38).

Though no 'proper' Tifinagh inscriptions are recorded at Foum Chor and Ahel-Ebdemmed sites, it is important to note that the characters of a considerable number of the abstract signs and geometrical motifs recorded at northern Atar resemble those of ancient Libyan and modern Tifinagh inscriptions.

Here are three important observations concerning Tifinagh inscriptions in relation to the two rack art corpora under comparison:

1- Tifinagh inscriptions are abundant in the Mauritanian rock art as a whole (for some examples, see, for instance, Monod 1938, Mauny 1954; Vernet 1996).
2- Only a very few Tifinagh inscriptions have been found in northern (Saharan) Mali: the most important sites are Zamgoï, Outagouna, Gao, Niangaye and Airé Soroba (Huysecom & Marchi 1997: 356).
3- No Tifinagh inscriptions have been recorded south of the Niger River.

This distribution indicates that the left bank of the Niger River is the southernmost limits for the extension of the Berber expansion (see also Marchi 1998). The distributional pattern given here in addition to the major differences between the represented motifs of the two corpora shown in the above comparison, therefore, disallow a possibility of northern influence in the Malian sub-Saharan.

As to Arab inscriptions, which consist of separate words in most cases and seem to be of a very recent date than the associated rock art on the basis of patina and superimposition, only a few are recorded at Foum Chor (see Chapter 4). No inscriptions in Arab characters have been reported from southern Mali. Similar to what has been already said regarding Tifinagh inscriptions, the concentration of these few Arab inscriptions in northern Mali in addition to their complete absence in the southern sites of sub-Saharan Mali suggests a cultural boundary between the northern Mauritanian (Berber?) and sub-Saharan Malian (Mande?) rock art.

VI.2.1.2 Conclusions on the possible link between the engravings of northern Atar and the rock art of sub-Saharan Mali:

Examining formal variation in rock art images (as a finished product of material culture) shows major differences between the rock art of northern Atar and that of the sub-Saharan Mali. The comparisons and discussions made above visibly demonstrate that these differences are not only in artistic but also in technical style and thematic content as well.

As to the difference in artistic style, we generally note that semi-naturalistic style (Foum Chor cattle) and stylisation (the Ahel-Ebdemmed horses) dominate the rock art of northern Atar, while a tendency towards schematisation (the cattle or '*corniforms*' and the horse of Fanfannyégèné II) rules the bulk of the Malian sub-Saharan corpus. Even if we compare the schematic representations of Foum Chor (Figs. 53a: 10, 11, 12, 13, 14, 15, 17 and 18) with the schematic depictions of sub-Saharan Mali, we will reach at the same conclusion.

Dissimilarities in technical style are also detected among the motifs of the two rock art corpora: the pecked (outlined) cattle or the pecked (outlined) cattle with partly pecked body (Foum Chor) and the fully 'dotted' cattle (Fanfannyégèné I); the "U" technique of the schematic representations of Foum Chor and the linear style of those of the Malian sub-Sahara; the engraving technique (Foum Chor and Ahel-Ebdemmed horses: petroglyphs) and the painting technique (the horses of Fanfannyégèné II: pictographs). Indeed, it goes without saying that these differences in (technical) style must indicate major variation in the operational sequence (*chaîne operatoire* or *modus operandi*) followed in making the images of these two artistic products/manufactures (or the two rock art corpora).

Regarding the variation in thematic content of the two corpora under discussion, it is interesting to note that antelopes, ibexs (?), gazelles (?), canids, hyenas, and carnivores, are present in northern Atar rock art and not depicted in Malian sub-Saharan corpus. Similarly, goats (?) and boats are represent in the later corpus (see Huysecom *et al.* 1996; Marchi 1998), while they are absent in northern Atar engravings. Finally, we have to keep in mind the divergence in local traditions of

abstract signs and/or geometric motifs. The few similarities in thematic content of the motifs of the two corpora are explained away here since they are limited to only a few abstract signs and/or geometric motifs (see *VI.2.1.1*, this chapter, and also Tables 20 and 21 above). Moreover, these similar motifs seem to be common to many world rock art traditions and thus may be a case of parallel invention.

In conclusion, a lack of thematic unity and variations in artistic and technical style lead us to identify these two rock art corpora as two different 'ethnic' units and, consequently, reject cultural affinities/associations between the two. We, therefore, are not in a position to claim Niger-Congo roots for the rock art of northern Atar (*e.g.* Mande and proto-Mande). We now have to discuss other possibilities: Afroasiatic or northern affinities (*i.e.* a Berber and proto-Berber link).

VI.2.2 Northern Atar engravings and the rock art of northern part of Sahara (the known Berber rock art):

According to Vernet (1993: 210), northern Mauritania and the Western Sahara seem to be a frontier zone for rock art. The reason for that is evidently geographical. This observation, however, is of a vital importance in our quest to determine whether the engravings of northern Atar belong to Afroasiatic (*i.e.* Berber and/or proto-Berber) speakers or the notional ancestors of the region's current inhabitants.

The geographical location of the northern part of the country (Mauritania) may lead one to look at the engravings of northern Atar as an extension of rock art traditions of the north (the Algerian Sahara, Moroccan Atlas and the Western Sahara or formerly the Spanish Sahara). In the following sub-sections (VI.5.2: 1 and 2) I examine such an assumption arguing whether or not the rock art corpus under investigation is of northern (Berber and proto-Berber) affinities.

VI.2.2.1 The possible connection with Algerian rock art:

The Algerian Sahara comprises one of the most important corpora of world rock art. Here, we are confronted with a great number and diversity of paintings and engravings. The Tassili-n-Ajjer, the Hoggar, and southern Oran are among the

prominent localities of this corpus. For the purpose of this study, we give a brief outline of this enormous corpus.

The engravings of '*Bubaline* or Large Wild Fauna Phase' are concentrated in Southern Oran, the Hoggar, and the Tassili (Alimen 1957; Lhote 1961; MaBurney 1960). They are represented in naturalistic style and are usually of large size. The technique consists of deep grooves or incised polished outline (Willcox 1984). The paintings of the 'Round Heads' chiefly occur at Tassili (Lhote 1959). In addition to wild animals (excluding *Bubalus antiquus*) are also represented among the depictions of this phase: the 'Round Heads' (Willcox 1984). The paintings of the 'Bovidian Phase' are executed in polychrome and appear in herds with their herders (*cf.* Brentjes 1969, 1984; Lhote 1959; Smith 1993). Cattle show different types of horns (both short and long horned cattle are depicted) and one can distinguish pictures of humpless and humped cattle (Dupuy 1995; Willcox 1984). Wild fauna is also depicted though the hunting scenes seem to be rare compared to those of the two phases mentioned above (Willcox 1984). The style here can be described as less naturalistic than the *Bubaline* style. Willcox (1984: 36) explains this by stating: "[...] with their preoccupation with their herds the artists were losing the hunter's eye". In addition to the painted bovids, engraved cattle are also present (see, for instance, Le Quellec & Bernezal 1997). In this case, they are of small size and have a less deep-grooved outline (Willcox 1984). The depictions of the 'Horse Period' are abundant in the Algerian Sahara. They are often represented as conventional polychrome 'flying gallop' horses with chariots (Chariot Sub-Period); and horses mounted by riders -some in flying gallop manner- (Horseman Sub-Period) (Lhote 1961; Willcox 1984). Libyco-Berber inscriptions usually accompany the depictions of the latter sub-period. Finally, there are the depictions of the 'Camel Period', with camels, which are said to replace depictions of the horse (Lhote 1961). They usually appear side by side with the Tifinagh inscriptions in addition to the scenes of hunting antelopes and ostriches (for some examples, see Hachid 2000).

A comparison between the Algerian corpus and that of the Mauritania allows us to reach a number of observations:

1- The engravings of Large Wild Fauna are also found in the Mauritanian Sahara. However, the Mauritanian corpus does not include images of *Bubalus antiquus*, and is less naturalistic than that of Algeria.
2- No Round Head representations are present among the depictions of the Mauritanian corpus.
3- Cattle, horse and camel representations, as well as Libyco-Berber and Tifinagh inscriptions are common in Algerian and Mauritanian rock art corpora. The former corpus, however, is characterised by its richness in pictographs while the majority of the Mauritanian rock art consists of petroglyphs.
4- Horses represented in the flying gallop style are well-documented in the Central Sahara, while none exist in the Mauritanian corpus. Yet, other schematic chariots or vehicles/carts (without horses) are found abundantly in, Mauritania (Zemmour), Morocco, Algeria (Oran, Tassili, Fezzan, Hoggar), and Mali (Adrar des Iforas).

In this connection, it is important to note that the motifs of the Algerian corpus (particularly those of Bovidian Period) are represented in narrative manner (see for instance, Hallier & Hallier 2001-2002; Kunz 1998); a characteristic that seems to be less often expressed in the Mauritanian corpus.

Comparing the engraved cattle of I-n -Azawa (Algerian Sahara), for example, with those of Foum Chor allows us to detect significant differences. The former bovids or quadrupeds are represented with linear arches on their backs (Scurtu & Le Quellec 2002). These motifs distinguish what is known as Ti-n-Tarabin School, which is known in the rock art of Central Sahara: in the Acacus and in the Tassili (Jabbaren and Ta-n-Zumaitaik). The fact that no bovids or even quadrupeds 'with lines of arches on the back' are known among cattle engravings of the Mauritanian corpus makes a direct link between the engraved bovids of northern Atar with those of Algeria and the Central Sahara improbable. Whichever the dates given to the Cattle Period in Algeria and in the western part of the Sahara, it is clear that we are confronted with two different "schools" of bovidian art.

On the contrary, among the paintings of the Horse Period (1500 B.C – turn of the millennium) in the Tassili and in the Acacus there are "double-triangular human [figures] with metal weapons" (Lutz & Lutz 1995: 91). The existence of similar motifs among the Mauritanian corpus- with special reference to those found in the north and central parts of the country (*cf.* Monod 1937, 1938; Mauny 1954; Lhote 1982; Vernet 1993) suggests Berber origins especially as the majority of these depictions are usually associated with Libyco-Berber and/or Tifinagh inscriptions. This, consequently, leads us to suggest that the engravings of northern Atar (which do not include anthropomorphic figures) present, at least in part, an artistic linkage with Berber/proto-Berber affinities elsewhere. The cattle of Foum Chor can also be included in this scheme since they are associated with a number of abstract signs and geometrical motifs that have strong parallels with ancient Libyco-Berber and/or Tifinagh inscriptions (see below).

However, it could be a grave error if we generalise such a conclusion for the whole corpus of Mauritanian rock art. At this point, Tichitt rock art could be taken as an excellent example (see, for instance, Holl 2002). The two main themes are bovids engraved by the cattle breeders of the Tichitt culture, and Libyco-Berber hunting scenes. But the rock art of this zone is distinguished from other Mauritanian regions. This is evidenced by a number of cultural elements. In contrast to Adrar and Zemmour, the represented bovids of the Tichitt region frequently bear sexual attributes (particularly an udder) and are more rarely shown with a chin strap. They are never represented mounted, and hoofs are very frequently "double". These aspects led Vernet (1993: 298) to attribute Tichitt engravings to a different cultural group than those found elsewhere in Mauritania. Compared to those of the northern and central parts of Mauritania, Vernet (1996: 135) also believes that cattle herders of Dhar Tichitt arrived from the east.

The presence of Tifinagh-like (proto-Tifinagh?) signs among the represented motifs, however, leads us to suggest that all the engravings of Foum Chor and Ahel-Ebdemmed sites belong to the Berber/Proto-Berber culture. Grouping the engravings of Foum Chor according to the level of patina and technique allows us to link the entire corpus to the Berber/proto-Berber culture since all the resultant groups comprise, in this case, a number of Tifinagh-like (proto-Tifinagh?) signs.

In their discussion on Saharan rock art, Coulson & Campbell (2001) give an example of the use of these characters or inscriptions to link the rock art to specific people. In this regard, they relate:

> Occasionally, the art [of the 'Horse Period'] is accompanied by [...] Tifinagh script, which suggests the art was done by Berber artists [...] From the Tifinagh script and subject matter, we can assume that the artists were ancestral Tuareg who, since the general exodus began more than 4,000 years ago, have most likely been the major inhabitants of the Sahara together with a few remnant hunter-gatherer groups. We believe that they were responsible for some of the art as most of the Tifinagh inscription occur with, rather than as graffiti on, the engravings.
>
> (Coulson & Campbell 2001: 160-195)

According to the foregoing argument, it seems that there is no solid-ground to link northern Atar engravings with the Algerian corpus apart from the Algerian Berber engravings. Yet, though there are a number of similar signs/letters in both corpora, this does not allow us to deduce direct affinities between the engravings of Foum Chor and Ahel-Ebdemmed, on the one hand, and the Algerian rock art, on the other. At this point, it could be useful to bring into light what Hugot (1970) wrote:

> The important works published by Th. Monod and R. Mauny on the rock art of West Africa show that we are in different province to the one where the Capsian artists resided [*e.g.* in Moghar and Tahtani in South Constantinios, and Bou Alam, in Algeria]. If we take the Mauritanian Adrar as an example, what is more striking is that there is an 'impression' of time difference between the works that we find. First of all, the 'Large Ethiopian Fauna' is poorly represented and above all less well-treated, and more 'decadent'. The only real and fresh touch is that of some small size red paintings, and black and blue ones that represent mainly horses, some elephants, maybe rhinoceros; they decorate the shelters occupied by the Neolithic people [...] In addition, there are numerous solar signs that seem to correspond to the Capsian spirals. The whole procession of graffiti, camels and caprines is recent, often contemporary [...] Moving towards the East, what we find in Iforas, the Air or Kawar is not at all different [...] Nonetheless, the Tibesti further to the east, and Tassili'n'Ajjer in the northeast offer different characteristics.
>
> (Hugot 1970: 111)
>
> (Translated from French)

All the above may explain why a link between the Algerian and northern Atar corpora seems relatively weak. Indeed, given the existence of early Berber communities from Morocco through to Libya before the Common Era (Hachid 2000), one can imagine that cultural influences criss-crossed this enormous zone rather than stemming from a single source.

VI.2.2.2 The possible connection between the rock art of Morocco and southern provinces (formerly the Spanish Sahara):

For some (*e.g.* Vernet 1993: 210), the rock art of northern Mauritania and that of Seguit el Hamra in the southern provinces of formerly the Spanish Sahara are related to the art of the Moroccan Atlas by the intermediary of numerous sites in wadi Draa (see Maps 17 and 18). But, are we really able to link the engravings of northern Atar with the rock art of these areas? To give an answer to this question, it is necessary to provide an overview regarding the nature of rock art in these areas.

Moroccan rock art is almost represented by engravings executed at open-air sites. Pictographs, which are more frequently located in rock-shelters and cave complexes, are very few compared to petroglyphs; only thirteen out of some 243 sites recorded in Morocco so far include paintings (see Simoneau 1977; Alaoui & Searight 1997).

According to the geographical distribution, Moroccan rock art is divided into two main groups: the engravings of the High Atlas Mountains (which stretch from south-west Morocco to the north-east) and those of the sub-Saharan regions to the south (Morocco south of the Atlas) (Alaoui & Searight 1997: 87). Semoneau (1977: 125), however, has divided this corpus into three groups: the high plains of the High Atlas (the sites of Teinant, Aougdal n'Oumghar, Oukaïmeden, Yagour, and Jbel Rat); the southern foothills of the Anti-Atlas and Jbel Bani (where there are a series of rock art sites between Taghjijt and Tafilalet); and the pre-Saharan hydrographic basins. Nowak and Ortner (1975) divide the latter group into two main geographical provinces of rock art: Saguia el Hamra (the sites of Uadei Aasli Bu Querch, Loma de Aasli) and Rio de Oro (the sites of Gleibat el Musdar, Auserd, Bu Lariah, and Leyuad). The geographical distribution of the whole corpus, in rather over-simplified

terms, seems to reflect two different areas of engravings. The following table shows the most important characters of each area:

	The High Atlas	The south (sub-Saharan zones) of Morocco
Main sites	Oukaïmeden, the Yagour plateau, the Jbel Rat	The south-western provinces (formerly the Spanish Sahara)
Main themes	Dominated by anthropomorphs, with images of weapons and shields	More varied: pictures of animals and pictures of cattle (types 'a' and 'b'); incursion of Libyco-Berber figures (type'd'); schematic "chariots"
Nature of images	• They form a more or less uniform whole though details differ from site to site: - in the Jbel Rat and to some extent on the Yagour plateau, horsemen and foot-soldiers of type'd' (Libyco-Berber) are also depicted - in Oukaïmeden and the Yagour plateau large-scale semi-realistic anthropomorphs are characterised. - in Oukaïmeden and in the Jbel Rat 'idols' images (in a shape of the Cycladic 'Fiddle-idols' in the former or ovoids with tails and antennae in the latter) are noteworthy - in Oukaïmeden and the Yagour plateau inscriptions are recoded. - in the Yagour plateau and the Jbel Rat chariots have been found • The engravings of animal representations (type 'a') are not easily to be identified in the High Atlas sites.	• The animal world (either wild or domesticated) holds greater importance at these sites. • Group or type'd' representations occur in small quantities in certain of this sites, while in few sites-notably in the upper reaches of the River Draa- this type is dominant. • Pictures of daggers, halberds, shields, and anthropomorphs (type 'c') are generally absent. With few exceptions, they are presented in Ait Ouazk (anthropomorphs and shields) and Tamsahelt (daggers).

(Table 23)

The contrast between the two main groups of Moroccan rock art

(Based on the information given by Alaoui & Searight 1997: 94)

Based on technique, theme, style, and size, the rock engravings of Morocco are typologically classified into four groups or types:

	Group or Type 'a'	Group or Type 'b'	Group or Type 'c'	Group or type 'd'	Others
Technique	Pecking and polishing	Pecking	Mainly pecking (but polishing is also employed in many cases)	Pecking	Polishing or pecking, or both
Theme	◦Wild Animals: antelopes, gazelles, ostriches (preferred), rhinoceros, elephants, lions ◦Cattle ◦Small sized anthropomorphic figures in profile (rare)	◦Cattle: with coat markings, variety of horn shapes, occasionally in herds: more often single or in groups of two or three ◦Wild animals	◦Daggers and halberds (hafted daggers) ◦Round and rectangular shields ◦Anthropomorphic figures in full face ◦Wild and domestic animals	Libyco-Berber engravings : ◦Equestrians and footsoldiers fighting or hunting (armed with small round shields and spears); ◦Dromedaries	◦Letters in the ancient Libyan alphabet (Tifinagh) ◦Chariots ◦"unclassifiable images"
Style	Tazina (School) style		Ranging from very rudimentary to semi-realistic human figures	Linear, stiff, and stick-like	Schematic (esp. chariots)
Size	Small size (around 0.30 m, occasionally 0.80 to 1 m)	Generally small, but many reach 1m and more	Small and life-size (human figure)	Small (0.25-0.30 m)	

(Table 24)

Typology of the Moroccan engravings

(Based on Alaoui & Searight 1997: 91-3)

It is striking that none of these sites comprises representations of all the four groups listed above. Many sites, however, contain images of at least two groups, but cases of superimposition are also absent and the patina is being identical. Hence, it is seems

difficult in such cases to state with certainty whether the depicted figures are a consequence of chronological separation of different groups or to internal factors within a single group (Alaoui & Searight 1997: 93-4).

The stylistic variety of the rock art of the eastern Saguia al-Hamra (which is situated in many cases on near-horizontal surfaces in the open) made Brooks and others (2000: 4-7) to suggest multiple periods for this corpus (*i.e.*, *Bubaline*, Round Heads, Pastoral or Bovidian, Horse and Camel Periods). The represented fauna include ostriches, giraffes, gazelles, rhinoceroses, and domestic bovids. The style is reminiscent of the Tazina style, with the elongation of the legs in depictions of animals.

VI.2.2.2.1 Comparison and analysis:

Taking into account the information provided in the above sub-section and that obtained from the description of northern Atar engravings (Chapter 4) it is possible to make a number of important observations.

Images of weapons (daggers and hafted daggers) and shields as well as anthropomorphic figures (*i.e.* those of type 'c' which dominate the rock engravings of the High Atlas) are not represented among the motifs of northern Atar. On the other hand, wild and domestic animals are shown among the engravings of both Atar and the most southerly zones of Morocco. Moreover, the engravings of northern Atar comprise depictions that show similarity to type'd' of southern Morocco: horses (but without riders) at Ahel-Ebdemmed, and equids and a dromedary at Foum Chor. The linear style and the small size (0.25-0.30 m) of some of these animals are among the most important characteristics of the zoomorphic motifs of the two corpora. The main interest of the engravers of northern Atar is directed to the animal world, both wild and domesticated. Similar perspectives or attitude also dominates the engravings of the southern zones of Morocco. One is therefore led towards the conclusion that northern Atar engravings are more likely correlated with those of southern Morocco than with those of the High Atlas (see also Table 23 above).

As far as bovid representations are concerned, similar to those of the southern zones of Morocco, the engraved cattle of Foum Chor are shown with coat markings and the horns are depicted in various shapes. They are also represented either singly or in groups; the manner which characterizes those of Type 'b' in the sub-Saharan zones of Morocco. Another important point is that pecking is the main technique employed in executing these engravings (though polished line technique is also occasionally observed at Foum Chor). Regardless of the differences in the shape of head and horns and coat pattern, the bovid of Foum-El-Hassane (Ighir Ighanian, Tamanart basin, southern Morocco) (Fig. 129), for example, has a similar outline and is executed in the same technique as that of the cattle of Foum Chor (Figs. 51, 52, 53a, and 66). The engraved bovids found in Akka (Adrar Metgourine, southern Morocco) (Fig. 130), which have the same body design or outline but different head profile and horn type, are also executed by using the same technique employed to depict the pecked (outlined) cattle of small size with partly pecked body at Foum Chor (Figs 53a.6 and 7, 65, 66, and 67).

Further south, in the southern provinces (Seguit el-Hamra and Rio de Oro: formerly the Spanish Sahara or the Western Sahara, see Map 17 and 18), there are also bovid engravings which are comparable to those of northern Atar. Based on the work published by Nowak & Ortner (1975) it is possible to observe the following:

1- Regardless of the difference in the shape of horns and coat patterns, the engraved bovids of Gleibat el Musdar (Fig. 131) and Foum Chor (Fig. 53a: 3, 4, and 5), show the same manner or mode of execution: in both corpora the represented cattle have the same rectangular body, the same U and/or V shaped two legs, and the same depiction of the tail which is frequently represented by merely a relatively long curved (free-tufted) line.
2- Similar techniques, which consist of pecked outline, partly abraded or polished in some cases, are employed to depict the animals of Foum Chor (Figs. 56, 58, 59, 60, 61, 62, 63 and 64), Oudi Aasli Bu Querch (Fig.132), and Loma de Aasli (Fig.133).
3- The same pecking technique and the same style (where animals have fully pecked body and are shown in schematic style) can also be noted in Oudi Aasli Bu Querch (Fig. 134) and in Foum Chor (Figs. 74 and 75).

4- The stylised engraved horses of Ahel-Ebdemmed (Figs. 91, 92, 94, 95, 96, 97a, 98, 99, 101, 104, 105, 106, 108, 109, 110, 111, 112, 11, 114, 115, 116, 117, 120, 12, and 122) are virtually identical to those engraved on the rocks of Bu Lariah (Figs.135 and 136), Auserd (Fig. 137) and Leyuad (Fig. 138).
5- A considerable number of schematic carts of similar types are represented in both corpora of Mauritania (see, for instance, Fig. a) and the southern provinces or the Western Sahara (Figs.139 and 140).

In addition to what has already been mentioned above, it is also important to note that, contrary to the painted "flying gallop" chariots of the Algerian corpus (*e.g.* those of Iheren, Ti-n-Kani, and Tamrit in Central Tassili, and Oued Djerat in Northern Tassili), "[the majority of] chariots from the Moroccan Atlas [and the western part of the Sahara including Mauritania] are engraved 'schematic' chariots" (Muzzolini 1992) and are not shown with horses. This gives the indication that the Mauritanian corpus – including the engravings under research- is probably more linked with the rock art of southern Morocco and the pre-Saharan hydrographic basins rather than to any of the Algerian corpora.

Other than the similarities between the representational motifs, it is important to discuss other motifs: particularly "geometric forms or symbols" such as letters in the ancient Libyan alphabet, Tifinagh, and abstract signs.

Pichler (2000: 176-8) gives a short account of Libyco-Berber inscriptions of Foum Chenna in the western boundary of the Oued Draa. As to the context of these engravings, there are inscriptions of Libyco-Berber characters associated with anthropomorphic and zoomorphic figures (mainly camels and riders). All of them have the same very light patina. From the Anti-Atlas, Pichler (1999) also introduces us to what he calls "the first Libyco-Berber inscriptions" there. These inscriptions are located at in Oued Chik Iminifiri, Ouaremdaz village (south of Irherm, Morocco). The patina of the engravings noted at this site ranges from dark (circles, geometrical motifs, serpentines, etc) to light brown (circles, half circles, humans, horsemen in a linear style that have been described as "*guerriers libyens*") and very light (Arabic inscriptions, recent dates, foot-prints, wheels, etc). As to the Libyco-Berber inscriptions, they are very darkly patinated five lines -consisting of 5-7 letters each-

two of them are in horizontal rows. According to Pichler (*ibid.* 146), their ancient age is also evident by the fact that "[they] do not contain the typical signs of the recent Tifinagh" (see also sub-section *VI.2.2.2.2.4.3* below).

The following table is to compare the characters of the abstract signs and geometrical motifs of northern Atar (Foum Chor and Ahel-Ebdemmed) with those of the Libyco-Berber inscriptions and other geometric forms or symbols recorded at the two sites mentioned above (Foum Chenna, Ouaremdaz) as examples of Moroccan and the southern provinces art rock.

Form	Foum Chor (F-C) (Northern Atar, Mauritanian Adrar)	Ahel-Ebdemmed (A-E) (Northern Atar, Mauritanian Adrar)	Foum Chenna (F-Ch) (O. Draa)	Ouaremdaz (O) (Anti-Atlas, Morocco)
	-	-	27	1
	-	-	6	-
	1	-	4	-
	-	-	11	-
	-	-	5	1
	1	-	-	-
	1	-	1	-
	-	-	1	-
	-	-	1	-
	-	-	2	-
	-	-	1	-
	31	1	17	-

	-	-	17	3
	-	-	5	1
	-	-	-	1
	-	-	5	1
	-	-	-	1
	1	-	-	-
	11	-	38	5
	-	-	13	2
	-	-	1	-
	-	-	8	1
	3	1	28	9
	1	-	1	7
	44	8	11	2
	22	5	45	1
	12	2	2	1
	5	-	18	3
	1	-	-	-
	-	-	2	1
	1	-	2	1
	-	-	21	1
	-	-	1	-
	1	-	-	-
	2	-	28	-
	1	-	5	-
	-	-	1	-
	-	-	1	-
	-	-	1	-

	-	-	6	-
	1	-	-	1
	-	-	1	-
	-	-	1	-
	-	-	3	-
	1	-	1	-
	2	-	7	-
	-	-	6	-
	-	-	1	-
	-	-	1	-
	1	-	1	-
	-	-	2	-
	-	-	6	-
	-	-	1	-
	-	-	1	-
	-	-	1	-
	-	-	3	-
	2	-	1	-
	-	-	1	-
	-	-	1	-
	-	-	2	-
	-	-	1	-
	-	-	3	-
	-	-	1	-
	1	-	-	-
	1	1	-	-
	2	1	-	-

	-	-	1	-
	-	-	2	-
			1	
	1	-	5	-
	-	-	2	-
	-	-	1	-
	1	-	-	-
	-	-	1	-
	2	-	-	-
	2	-	-	-
	2	-	-	-
	4	-	-	-
	1	-	-	-
	2	-	-	-
	5	-	-	-
	6	-	-	-
	1	-	-	-
	1	-	-	-
	2	-	-	-
	1	-	-	-
	1	-	-	-
	1	-	-	-
	1	-	-	-
	1	-	-	-
	1	-	-	-

	1	-	-	-
	1	-	-	-
	1	-	-	-
	1	-	-	-
	3	-	-	-
	1	-	-	-
	2	-	-	-
Total no. of marks	196	19	395	44
Total no. of motifs	51	7	63	20

(Table 25)

Abstract signs and/or geometrical motifs of Foum Chor, Ahel-Ebdemmed, Foum Chenna, and Ouaremdaz

From the above table, it is possible to calculate the average number of of marks per motifs in each site (*i.e.* total no. of marks in each site divided by the toral no. of motifs):

F-C = 196/51 = 3.8

A-E =19/7 = 2.7

F-Ch= 395/63 = 6.3

O = 44/20 =2.2

This measurement shows that 'the average no. of marks per motifs' is relatively close in the four sites under discussion: it ranges from 2.2 to 6.3 (with highest average in F-Ch and lowest at O). For further statistical anlysis, the above table can be reduced to the following form:

Recurrent marks	Foum Chor (F-C) (Northern Atar, Mauritanian Adrar)	Ahel-Ebdemmed (A-E) (Northern Atar, Mauritanian Adrar)	Foum Chenna (F-Ch) (O. Draa)	Ouaremdaz (O) (Anti-Atlas, Morocco)
	-	-	27	1
	1	-	4	-
	-	-	5	1
	1	-	1	-
	31	1	17	-
	-	-	17	3
	-	-	5	1
	-	-	5	1
	11	-	38	5
	-	-	13	2
	-	-	8	1
	3	1	28	9
	1	-	1	7
	44	8	11	2
	22	5	45	1
	12	2	2	1
	5	-	18	3
	-	-	2	1
	1	-	2	1
	-	-	21	1
	2	-	28	-
	1	-	5	-

[illegible]	1	-	-	1
[illegible]	1	-	1	-
[illegible]	2	-	7	-
[illegible]	1	-	1	-
[illegible]	2	-	1	-
[illegible]	1	1	-	-
[illegible]	2	1	-	-
[illegible]	1	-	5	-
Total no. of recurrent motifs	21	7	27	18

(Table 26)

The recurrent motifs in Foum Chor, Ahel-Ebdemmed, Foum Chenna, and Ouaremdaz sites

From the table, the cross-links (∩) between the four sites can be represented as following:

	F-C	**A-E**	**F-CH**	**O**
F-C	-	7	18	9
A-E	7	-	5	4
F-Ch	18	5	-	17
O	9	4	17	-

(Table 27)

The cross-links between Foum Chor, Ahel-Ebdemmed, Foum Chenna, and Ouaremdaz sites

1- F-C ∩ A-E = 7 motifs

This shows that 14% (7/51) of F-C motifs participate in A-E site and form all 100% (7/7) of A-E motifs.

2- F-C ∩ F-Ch = 18 motifs

This means that 35% (18/51) of F-C motifs participate in F-Ch site and cover 29% (18/63) of F-Ch motifs.

3- F-C ∩ O = 9 motifs

This illustrates that 18% (9/51) of F-C motifs participate in O site and represent 45% (9/20) of O motifs.

4- A-E ∩ F-CH = 5 motifs

This demonstrates that 71% (5/7) of A-E motifs participate in F-Ch site and constitute 8% (5/63) of F-CH motifs.

5- A-E ∩ O = 4 motifs

This displays that 57% (4/7) of A-E motifs participate in O site and comprise 20% (4/20) of O motifs.

6- F-CH ∩ O = 17 motifs

This shows that 27% (17/63) of F-Ch motifs participate in O and shape 85% (17/20) of O motifs.

From the above, I conclude that F-C and A-E have the strongest link: all the recurrent motifs of A-E are represented among those of F-C while 18 in F-Ch and only 9 in O are presented among the 21 recurrent motifs of F-C. This could be attributed to the fact that A-E site has the lowest number of recurrent motifs (7) compared to the other two sites (27 in F-Ch; and 18 in O). At the same time, the highest number of cross-linked motifs is between F-C and F-Ch sites (18 motifs) while the lowest is between A-E and O sites (only 4 motifs). This phenomenon can also be explained in the light of the total number of the represented marks in each site (F-Ch: 395, F-C: 196, O: 44, and A-E: 19).

The statistical results shown here seem to be correspond with the geographical distribution of the four rock art sites under investigation. In effect, the first two site (F-C and A-E) are located in a very close proximity in northern Atar, Mauritanian Adrar, while the other two sites (F-Ch and O) are situated further north (Oued Draa in the Western Sahara and Oued Cheik Iminirfi in the Anti-Atlas, Morocco). The similarity or dissimilarity in abstract signs follows their relative geographic distance closely.

From all the above, it is clear that the four sites under comparison share a considerable number of similar motifs. It is also notable that the four motifs  ,  ,  , and  are common at all four sites (see Table 28 below). It is possible at these sites that we are witnessing regional (?) variations in these abstract motifs.

motifs	Foum Chor (F-C) (Northern Atar, Mauritanian Adrar)	Ahel-Ebdemmed (A-E) (Northern Atar, Mauritanian Adrar)	Foum Chenna (F-Ch) (Oued Draa)	Ouaremdaz (O) (Anti-Atlas, Morocco)
	3	1	28	9
	44	5	11	2
	22	6	45	1
	12	4	2	1

(Table 28)

The most common motifs at Foum Chor, Ahel-Ebdemmed, Foum Chenna, and Ouaremdaz

One of the most striking aspects of similarities between the engraved signs and/or geometric motifs becomes evident if we compare Figure 53b.80 (Foum Chor) (see also Figs. 66) with Figure 141 (Oudi Asli Bu Querch, the Western Sahara). At this juncture, it seems that we are witnessing the same character, the same structure, and also the same technique: the represented sign in both sites consists of a number of connected inverse U (five) and executed in a pecking technique. Similarities can also be detected once more among the signs in both Foum Chor (Figs. 28a.28 and 40) and Bu Lariah, the Western Sahara (Figs. 142 and 143). These substantial similarities can be shown in the following table:

Northern Atar	**Southern Provinces (The Western Sahara)**
 Foum Chor (Fig. 53b.80)	 Oudi Asli Bu Querch (Nowak & Ortner 1975: *Abb.* 71)
 Foum Chor (Fig.28a.28)	 Bu Lariah (Nowak & Ortner 157: *Abb.*157 & 158)

(Table 29)

Two aspects of similarities between the geometric motifs of Foum Chor (northern Atar) and Oudi Asli Bu Querch and Bu Lariah (the Western Sahara)

The similarities shown above, thus, allow a link between the engravings of Atar region (the Mauritanian Adrar) and known Berber rock art especially that of the sub-Saharan regions to the south (*i.e.* Morocco south of the Atlas and the southern provinces or the Western Sahara). Before placing the northern Atar engravings within a culture-historical context, it could be useful to give a general discussion on the Berber people and Berber archaeology in the Sahara.

VI.2.2.2.2 Berbers and Berber archaeology in the Sahara:

It is hardly possible to give a comprehensive account of the history and prehistory of the Berber people in a few pages or even in a single independent work. The aim of this sub-section, however, is merely to pave the way to trace the cultural history of the Atar region via the recorded engravings (sub-section VI.3 below). Hence, we concentrate here on a number of particular issues which include the question of Berber origins, the presence of Berbers in Mauritania, the role of Berbers in trans-Saharan commerce (trade), and identifying Berbers in the archaeological/rock art record.

VI.2.2.2.2.1 The question of Berber origins:

The question of origins is always a major concern in any discussion regarding the Berber people. In his discussion on "Living Tribes of the Sahara and the Problem of their Prehistoric Origins", Briggs (1957) summarises the difficulties that face the researchers of this question:

> [...] we are in no position to say, even in broad general terms, when the first Tuareg ancestors [the proto-Berber] did settle in the Sahara or whether or not they were ever connected in any way with any of the prehistoric industries that we find there.
>
> (Briggs 1957: 197)

In their work *The Berbers*, Brett & Fentress (1996) deal with the same issue:

> In defining Berbers as indigenous North Africans we have begged the question of their origins [...] This is not an easy task: prehistorians disagree on it, and the evidence is complex.
>
> (Brett & Fentress 1996: 10)

Despite the fact that the ultimate origins of the Berbers remain uncertain, some scholars (*cf.* Bullard 2001; Huxley 1964) believe that the existence of this people in the Maghreb (western North Africa) goes back well before the historic period. According to this view, Berber civilisation precedes all other civilisations that once flourished in this area (*i.e.* Phoenician-Punic, Hellenistic, Roman, Vandal or Gothic, Byzantine, and Arab).

'Barbarians' is the word used by the Egyptians to designate "the people in the oases, tribes of foreign men who were possibly of European origin and entered through the western frontiers of Egypt" (El-Mosallamy 1986: 51).

Historical references (*i.e.* Greek and Roman documentary soursces, such as Herodotus, Strabo, Pliny and Ptolemy) have made contributions to the subject. These sources, as Keenan (1977: 14) points out, "provide sufficient names to suggest that the populations which we now call Tuareg had almost certainly reached the Sudanese regions between the Niger bend and Chad 1,800 years ago". Depending on such early written sources (especially those of Herodotus) Newman (1995) also relates:

> [...] grouping known by such names as Garamants, Bavares, Troglodytes, Nasamones, Mauri, Lotophagi, Giligamai, Marmaridai, Masaesylii, Gaetuli, and Pharusii [...] represent the immediate ancestors of the modern-day Berbers.
>
> (Newman 1995: 63)

In the fourteenth century, Ibn Khaldūn (1332-1406) described the Berbers (the 'veiled Sanhadja' Berbers, or Western Berbers: the Lemta, the Targa, and the Guedala) as a people of deep historical roots in the Maghreb; the people who inhabited this area "since the beginning" (Ibn Khaldūn in Brett & Fentress 1996: 1). Other Arab historians (*e.g.*, al'Tabari, al-Mas'udi, and as-Suhayli) believe that the Berber of North Africa came to the area -which extends from the western Nile region in Egypt to the Atlantic Ocean- from the Arabian Peninsula at some point in the distant past (El-Rashdy 1986: 77).

Linguistic evidence is also employed to support the antiquity of the Berber people:

> Proto-Indoeuropean [esp. Greek, Roman] had appeared only 6000 years before, while the Afroasiatic went back 17,000 years; French, Italian, Spanish, Romanian, all Roman languages, derive from the Latin languages used in the Empire 2000 years ago while Berber probably begin with the proto-Berbers approximately 8000 or 7000 years ago.
>
> (Hachid 2000: 179)
>
> (Translated from French)

As we already know, Libyan -which constitutes the ancient form of the Berber language- belongs to the Afroasiatic. Accepting an origin date for this phylum at the beginning of the Holocene (*ca.* 12000 bp), or even the date during the Holocene optimum (*ca.* 7000-6000 bp) when Afro-Asiatic speakers were almost certainly present in north and north-east Africa (MacDonald 2003), puts us in the position to suggest that the proto-Berber is among the most ancient Afroasiatic proto-language forms in the northern hemisphere of the continent.

Anthropological analysis made on the physical characters of the Berbers claims that "they [...] have affinity with western Asiatic stock" (Bullard 2001: 184). Evidence from rock art (*i.e.* Libyan inscriptions) has been used to support such an analysis:

> S. Schaar points out [...] that ancient inscriptions [which have been discovered in the Sinai Peninsula and in the Nile Delta] "seem to have been written by the ancestors of the modern Berbers". He notes that some researchers believe that this ethnic group moved into Africa from western Asia.
>
> (Bullard 2001: 184)

This, however, contradicts some early views which propose that Berbers were "part of a Mediterranean racial group that included Celtic-Iberians and Semitic people (*e.g.*, Phoenicians from the Levant)"; or with views that see the Berbers as "Aryans or as a Caucasian stock which had mingled with "indigenous Libyans"; or views that refer to a "close relation of the Berbers with the ancient Egyptians, and considered them as forming together a "White African race" (*ibid.* 184).

Archaeologically, proto-Berbers have been associated with the Capsian. The Capsian industries (*ca.* 7000 BC) discovered in El Mekta near Gafsa (southern Tunisia) and in Afalou (Algeria) are connected with no immediate local predecessors, and their diffusion from the eastern Mediterranean has been proposed (*cf.* Brett & Fentress 1996; Camps 1982; Camps-Fabrer 1989; MacKendrick 1980):

> The Capsian appeared [by] the very end of the eighth millennium. The so-called Upper Capsian continued until about 4000 BC in eastern Algeria and until 4000 BC in the westerly part of its distribution. Capsian man was a proto-Mediterranean who gradually replaced Mechta-Afalou man [indigenous people: the Mechtoids] during Upper Capsian and Neolithic times: the Capsian physical type was ancestral to the present-day Berber peoples.
>
> (Camps 1982: 552)

> At Capsa (modern Gapsa) in southern Tunisia, the people, at a carbon 14 date about 6000 B.C., were very fond of snails, so much so that the shell heaps they left behind them, called *escargotiéres*, sometimes measure twenty-five meters long, as many wide, and three meters thick. Such a deposit, from what has come to be called Capsian culture, would require, according to one calculation, twenty-five hundred years to accumulate. We call the descendents of these late Paleolithic snail-eaters the Berbers.
>
> (MacKendrick 1980: 30)

Nevertheless, there are those who see a non-eastern origin of the Capsian industries. Depending on the data obtained from the analysis of the ecological setting and economies of the Maghreb Epipalaeolithic sites (*e.g.* lithic assemblages, faunal and floral remains, cranial morphology, site location, and chronology), Lubbell and others (1984: 148) conclude that "The Capsian developed from the Iberomaurusian and not as a result of migration or diffusion from the east". They accentuate "a continuity of development within regions from the Iberomaurusian to the Neolithic" (*ibid.*); "continuity between the late Pleistocene Iberomaurusian and early Holocene Capsian industries", (*ibid.* 148). Accepting this conclusion, then, opens the door for a possible Iberomaurusian (Mechta Afalou) rather than proto-Mediterranean or eastern origin of the proto-Berbers.

From the above, it is obvious that scholars disagree on the origins of Berbers. Tracing their origins, thus, remains difficult to delineate with certitude until new evidence come to shed light on the subject.

VI.2.2.2.2.2 The presence of Berbers in Mauritania:

The emergence of the Libyco-Berbers designates the end of the Neolithic period. They are thought to have been responsible for the introduction of the chariot and horse (1000 BC) which frequently appear in rock art depictions (El Hady n.d. 107-8).

They were already on the move towards the south by the beginning of the first millennium AD:

> By the beginning of the Christian era, the three main groups of nomads who still inhabit the Sahara – the Sanhadja, the Tuareg and the Teda – had already pushed their way deep into the Sahara. Their mobility, however, was limited, until they adopted the camel as a means of transportation [...] It was not until the middle of the third century [...] that the Sanhadja adopted [the camel] for use in the Atlantic Sahara – today's Mauritania. The camel enabled the Sanhadja confederation to master the great stretches of desert and to gain mobility in military operations. One can speak of the "camel revolution" as having taken place over two or three centuries, freeing the Sanhadja from northern Africa economically and politically and increasing their military power. Their rule was then extended to the shore of the Sénégal River.
>
> (Gerteiny 1967: 19-20)

The main tribes of the Sanhadja Berbers (who were responsible for the introduction of the camel to Mauritania in the second and the third centuries AD) include the Lemtuna, the Djodala, Lemta and the Messufa (El Hady n.d. 108). The Sanhadja Berbers of the Maghreb were not arabised/islamised after the Arabs penetrated their area. They faced the Arabs with fierce resistance since the seventh century (639 A.D.); their autonomous confederation fell to the Arabs only by the beginnings of the eighth century (709 A.D.) after sixty years of warfare. The the Islamisation of The Sanhadja confederation of tribes took over 500 years; this was achieved among all the western Berber tribes only by the end of the fifteenth century (Gerteiny 1967: 25-8)

The importance of the Sanhadja Berbers extends beyond the resistance of the Arab conquerors. They were also involved in resisting the penetration of the sub-Saharan elements to the north (*i.e.* the the empire of Ghana to the east-southeast (including much of the contemporary Mauritania) and the Tekrur Kingdom to the south (also including a part of contemporary Mauritania) (*ibid.* 21-3)

The Lemtuna of what was Aoudagwst (today's Tegdaoust), for example, were in a major war with the Empire of Ghana in the late eighth century. They imposed their authority over many parts of the kingdom until they were driven out of Aouker, then their capital Aoudaghost fell to Ghana towards the end of the tenth century (*ibid.* 24).

From 1035, the Sanhadja confederation (with special reference to the Djodala) where responsible for the foundation of the *murābitūn* Islamic movement/state (Gerteiny 1967: 25; El Hady n.d. 118-20) that gradually led to the fading of the tribal Berber identity of the Sanhadja. By 1026, there were two distinct Sanhadja empires: the Almoravids in the north and the *murābitūn* in the south-originally the same movement (Gerteiny 1967: 28). In 1125 Ibn Tumert, Mahdi of the Maçmīda of the High Atlas began a rebellion; this led to the collapse of the former empire in 1150 (*ibid.* 30).

From the linguistic point of view, it is interesting to mention here that "before the advent of the [Arab tribes] of the Bani Hassān in the fifteenth century, the tribal confederations of northern Mauritania spoke the Berber dialect Zenet and its parent language Zenaga" (*ibid.* 82). This means that the Sanhadja Berbers remained linguistically independent for a long time after the Arab penetration in the Maghreb which took place for the first time in the seventh century (670 A. D. in Fezzan)

The Sanhadja, these nomadic Saharans who reigned over all the Maghreb, are the ancestors of Mauritania's bīdān (*ibid.* 30): the Moors who are ethnically a mixture of the Berbers and Arabs (the Bani Hilāl (*e.g.* the Ma'qil) and the Bani Soleim –the Yemeni Bedouin people- who started penetrating North Africa in the early eleventh century) (*ibid.* 32). "Towards the end of the fifteenth century, the mixing of Arab and Sanhadja societies began to form the Moorish personality as we know it today, and the hierarchy of Moorish society began to take shape [...]: the *hassān* or the *arab* applied to the warriors; and *zāwaya* or *murābit(ūn)* applied to the monastics" (*ibid.* 33). After the peace of Tin Yedfad which ended the Chār Bobbah, Mauritania's Thirty Years War (1644-74) between the Sanhadja Berber or *murābit* (leading by the Lemtuna imām Abū Bakr ibn Omar) and the Arabs (Bani Hassān), the Sanhadja Berbers abandoned the sword for the Book (the Koran and Islamic teaching), "the fusion was completed, and the Moorish race of Mauritania was born" (*ibid.* 34).

The historical events mentioned above lead us to speak about the Moors (Arabo-Berbers) who, from the ethnic point of view, constitute an ethnic extension/continuation of the Berber elements in the Maghreb and northwest Africa including Mauritania:

[...] the modern Moors are both physically and culturally products of mixture between Arab invaders and nomadic Berber tribes that the invading Arabs found already living along the northern and northeastern borders of [the Western] Sahara [...] Many Moorish myths that deal with tribal origins tell of ancestors who came into the central [Western] Sahara from the south [*e.g.* Ouadane] the Moors came originally from the northwestern desert, some of them at least migrated southward to the fringes of the Sudan and then finally moved north again, into [the Western] Sahara.

(Briggs 1960: 211-12)

According to Grove (1970) the modern Moors have inter-married or at least interbred with their former black slaves thus creating a mixed physical type:

A white Moor, or *bīdān* is ethnically defined as one of Arab-Berber origin. Most Moors add the specific that he be a nomad. Such "pure whites" are found primarily in Saharan Mauritania; the *bīdān*'s skin becomes progressively darker toward the south as a result of intermarriage with black Africans. Thus a *bīdān*, or white Moor, is either an Arab-Berber or a Negroid Arab-Berber. This statement, of course, is anthropologically vague, since Arab and Berber also present mixed ethnic groups-Semitic and Chamitic. The other elements entering the Moorish mixture range from the non-Negroid Nilotic Fulbe to the Negroid Wolofs, through the mysterious Bafour and their descendents, the Sarakoles.

(Gerteiny 1967: 47-8)

The Moors are nearly all-nomadic pastoralists (Rake 1984: 127). They, as Puigaudeau (1937: 18) described them, "remained what they really were, nomads". This coincides with what Briggs (1960) relates:

Moorish economy is based primarily on pastoral nomadism, which in this case depends on sedentary centres to a lesser degree than elsewhere in the Sahara. The country of the Moors exceedingly barren for the most part, and agricultural centers and oases are very few and very poor [p. 222]. There is said to be a slowly growing tendency among the nomadic Moors to settle down to a semi-sedentry commercial life, but it has not yet made any very substantial progress except perhaps in the south. [p. 226]. Driven as they are constantly by sparse pasturage [and] scanty water [...] the Moors seldom stay anywhere very long [p. 228].

(Briggs 1960: 222-8)

The Moors of Mauritania are divided into two main groups: the white Moors (the Bidan) who constitute more than 55%, and the black Moors (the Harattin) who are thought to be descended from the slaves of the Bidan (Rake 1984: 127). Briggs (1960: 211), however, has used the term "Moor" to refer to "the basically white and mainly pastoral nomadic population of [formerly] the Spanish Sahara and of [formerly] the French Saharan territory which adjoins it on the east and south, extending inland to about 7° West Longitude and southward to the Senegal draining system".

The Harratin or black Moors (see also Briggs 1957, Gerteiny 1967) occupy a lower position in the Moors' social class structure:

> There are four main levels in Moorish society, the uppermost of which [the *adma*] consists of predominantly Arab Shorfa [*cheurfa*] and warlike nomad clans, and Arabo-Berber Marabouts. Next come [the *lahma* or the *zenāga*] the tributary vassals, the nomadic fishermen of the coast (the Imraguen), and the pastoral nomads of the interior, as well as few sedentary and semi-sedentary Moorish groups. Next in rank are itinerant entertainers and the smiths, followed by the Haratin, the freedmen, and finally the slaves.
>
> (Briggs 1960: 219)

The label 'Moor', however, is problematic since it extends beyond the question of skin-colouring to include the cultural and social considerations. At this point, Gerteiny (1967) explains:

> Attempts to set forth the origins of the Moors or to establish who is a Moor - particularly whether a "white" or "black" Moor – are bound up in controversy. Actually, the distinction between a "white" or "black" Moor has little to do with skin coloring; it rests on paternal descent. If a father is considered a white, his children-no matter how dark their skin, no matter what the race, color, or social condition of their mother-inherit his "superior" status. Among the Moors, the classifications of black and white concern status and social condition. A Moor is regarded as any person, irrespectively of skin color, who speaks any of the numerous dialects of Hassāniyya, a language which, in its purest form, draws heavily on the original Bedouin Arabic spoken by Bani Hassān invaders. The words Moors and Mauritania are Latin in origin; they are a relatively new addition to the Hassāni vocabulary. Their usage has become current, particularly since the French Pacification drive at the beginning of the twentieth century (1901-34).
>
> (Gerteiny 1967: 46)

Stewart (1972) deals with the same issue involving the religious, the historical, and the geographical dimension in addition to the ethnic and social aspects:

> The appellation 'Moor' comes from Latin and has been applied at various times to Muslim people from Andalusia to the Senegal basin. Its use in describing the inhabitants of Shinqit was formalize at the time of the French conquest of the western Sahara, although it had been in use at least since the eighteen century, and it is used today by Mauritanians. A Moorish noble, however, until recent times would be more likely to identify himself as a *bidani* rather than the less precise term 'Moor'.
>
> (Stewart 1972: 377)

From what has already been mentioned in this sub-section (and elsewhere in the present chapter), we conclude that the Berber elements were present in Mauritania during both historic and prehistoric times. The various migrations/invasions that the area witnessed over this long period led to the mingling or interbreeding of the majority of the Berber stock which is recently known under the "Moors" or "Moorish society". Yet, it is possible to find, though rare, the 'pure' Berbers isolated in the mountainous areas of the Saharan zone and its northwestern fringes.

VI.2.2.2.2.3 The role of Berbers in trans-Saharan commerce (trade):

Most scholars agree on the important role of the Berbers in trans-Saharan trade. Mattingly and others (2003) attribute this role to the palaeo-Berbers who are said to have been responsible for the diffusion of the chariot and horse in a great portion of the Sahara:

> The people who we might expect to have been responsible for the diffusion of horse and chariot from oasis to oasis are Palaeoberber oasis-dwellers, developing agriculture and trade routes with the help of the horse in particular.
>
> (Mattingly *et al.* 2003: 345)

Masonen (1997), however, gives the dromedary, not the chariot and horse, the greatest role in the trans-Saharan trade carried by the Berbers:

> Rather than the fearless Garamantes with their galloping horses, a more likely candidate to have been the carriers of early trans-Saharan contacts are the Berber nomads who were regularly moving in the desert with their camel flocks, following the change of seasons. The nomads who resided at the southern edge of Sahara left for the north in the beginning of the rainy season, returning to the south at the coming of the dry season. When they were in their pastures in the northern or central Sahara, these nomads certainly met people who, for their part, had contacts within the Roman *limes*. As the nomads learned to know the value of gold in Mediterranean world, they perhaps started to barter it with the peoples of West Africa for Saharan rock salt and copper. The gold was brought to the north where it was probably exchanged for dates, corn and such handicrafts as the nomads could not produce themselves. This type of exchange could not have started properly before the adoption of dromedary by the Saharan peoples, since horses do not survive well in the harsh conditions of the desert.
>
> (Masonen 1997: 121-2)

Following the introduction of the camel, the Sanhadja Berbers, as Gerteiny (1967: 20) points out, where able in the fourth and fifth centuries to establish the trans-Saharan trade routes whish extended from North Africa and the western Sahara to the Empire of Ghana in the south.

The Moors (the current Arabo-Berber inhabitants of the northwestern part of the Sahara) seem to be one of the inheritors of the important role that their predecessors (the palaeo-Berbers) played in trans-Saharan trade. In this regard, Baistrocchi (1997: 74) wrote: "The Berbers are probably late-comers to the Saharan and the Sahelian regions, and the tuareghs [Tuareg] and the maures [Moors] are the off-spring of the Berber family tree". As to the role of Moorish people in the trans-Saharan commerce, Briggs (1960) notes:

> Today the Moorish caravan trade still extends all the way from Marrakech, in southwestern Morocco, southward to a line running roughly east and west between the mouth of the Senegal River and the Niger Bend, but most of the merchants engaged in it belong to Maraboutic and other tributary vassal clans. Livestock and wool, the chief articles of exports, are exchanged mainly for dates, rice, grain, and various manufactured articles from the north and the northeast, while leather goods and millet are obtained from the Sudan in exchange for salt. Slave trading has been largely eliminated in recent years and the volume of caravan trade in general has been much reduced, especially in the north.
>
> (Briggs 1960: 226)

The information given above implies that the palaeo-Berbers (probably the Garamantes) had monitored the trans-Saharan trade since the "Chariot sub-period" (1,200 BC - 400 BC). The Sanhadja Berbers, however, mastered the trade routes across the Sahara from North Africa and the northwestern Sahara to Ghana when they were able to exploit the dromedary. Their successors, the Tuareg and the Moors who adopted nomadism as a way of life, inherited the same tradition. The routes they established for their trade linked the two Africas: the northern Saharan Africa and the sub-Saharan Africa. This trade, which included a variety of goods and merchandise from salt to slaves, can be regarded a window for Africa to the Mediterranean civilisation and the outside world. The trans-Saharan commerce carried out by the Berbers led not only to the flourishing of economic life in and outside the region and the mingling of different racial and ethnic groups, it also was a means of the spreading of Islam in a considerable part of West Africa.

VI.2.2.2.2.4 Identifying Berbers in the archaeological/rock art record:

Identifying Berbers in the archaeological/rock art record can be done via one or more of the following aspects:

VI.2.2.2.2.4.1 Berbers' metal objects represented in the archaeological/rock art record:

In the Sahara, it is believed that the Berbers mastered the technology of metal, the harness, and cavalry (Hachid 2000: 189). From the careful study of rock art images, one may easily recognise that there was a fundamental change in armaments at some time in the more recent past: "The bowmen of the Pastoral Period gave away to spearmen in the caballline phase, with metal-tipped weapons appearing in the later stages" (Mattingly *et al.* 2003: 343). Arms similar to those depicted (iron lances) have been recovered from tumuli in Saharan Niger and date to *ca.* 800 BC (Devisse & Vernet 1993).

As to the origin of metallurgy in the Sahara and West Africa:

> It seem more likely, as Mauny suggested almost two decades ago, that ironworking reached West Africa from the north across the Sahara, either from Carthage or from southern Morocco [...] Mme. Lambert's excavations at Akjoujt [in Mauritania] would tend to confirm this path of diffusion: she has shown that copper mining and smelting took place on a large scale in western Mauritania, beginning about the sixth century B.C.
>
> (Herbert 1984: 9)

Whichever path of the diffusion of metallurgy (the far western: southern Morocco, or even the central: via Carthage) - in both cases, the role of palaeo-Berbers in this dispersion remains certain:

> Huard [...] was not the first to suggest the importance of the Berber-speaking people in the role of transmission of iron working knowledge. Mauny (1952) had already noted the geographical distribution of these people and had emphasized their potential for interaction with iron using Phoenicians and Carthaginians in the early first millennium B.C.
>
> (Kense 1985: 13)

> The Libyans [see below] worked first copper and latter bronze, part of a wider Saharan complex [...]. It is likely that they later absorbed iron-working skills from the Carthaginians, and that pyrotechnology reached West Africa through Libyan [Berber] intermediaries.
>
> (Isichei 1997: 160)

The depictions of metal objects, which used to be found along side Libyan and/or Tifinagh inscriptions of the Saharan rock art (see sub-section *VI.2.2.2.2.4.3* below), therefore, can play a significant role in identifying palaeo-Berbers in the archaeological/rock art record.

VI.2.2.2.2.4.2 Ancient Egyptian depictions of the Berbers (Libyans) as compared to their representation in Saharan rock art:

Egyptian representations of Libyans – 'Libu' and 'Mashwash' (see Brett & Fentress (1996: 22) - are one of the sources that aid us to identify Berbers in rock art record.

Egyptian iconography immortalised the battles of Pharaohs with the Eastern Libyans who are represented with care where every detail of their cloths, their hair, and their

armament is depicted (Hachid 2000: 188). According to Mattingly and others (2003), there is a close parallel with the Libyans depicted in the Egyptian iconography (captives of war who originated from the tribes and oasis communities close to the Nile in the Western Desert) and the human figures of Saharan rock art. The similarities that one can find include "the great use of ostrich plumes among the Libyans as personal ornaments" (Bates 1914: 94). The same tradition can also be discerned among the cattle herders or pastoralists depicted in the rock art of the Tassili and elsewhere in the Saharan region (*cf.* Lhote 1959, 1961). Another important feature is that bodies of both the Eastern Libyans and the painted human figures of the Saharan reliefs are covered with tattoos of similar characters (see Bates 1914; Hachid 2000; Mattingly *et al.* 2003). For example, the corporal motifs of the painted human figures of proto-Berber Bovidians of the Neolithic (see, for example, Figs. 25, 30, 31 and 34 in Hachid 2000) and those of the four painted 'Temehu' or Eastern Libyans from the tomb of Seti I (Plate III in Bates 1914) can be compared. These 'corporal' motifs, as Hachid (2000: 85) writes, "bear a capital importance from a magico-religious [or socio-religious] point of view. [They] already played the role of a 'marker' as every group had its own" (Translated from French). She also notes that these 'markers' could be linked with particular activities: the hunters often have stripes on the legs while cattle herders have wavy-lines (*ibid.* 185). The close parallel between the two corpora extends to include penis sheaths (see, for example, Figs. 20, 21, 22 and 23 in Bates 1914; Plat 13 in McBurney 1960). Furthermore, "Pre-dynastic records such as Arki Knife have signs similar to those used to designate the Libyans in the historical Egyptian records" (El-Mosallamy 1986).

The significant point that should be mentioned here is that these Libyans are thought to present the ancestors of the modern Berber populations who spread throughout a considerable part of the Sahara. In this respect, Isichei (1997: 173) writes, "The Libyans of ancient history became the Berbers of more recent times.

VI.2.2.2.2.4.3 Geometric signs and inscriptions in Libyan and Tifinagh characters:

Another way to identify the Berbers in the archaeological/rock art records is via the abstract signs and/or geometrical motifs which constitute the Libyan or the Tifinagh alphabet. At this point, Brett and Fentress (1996: 208-9) state: "Another element of

continuity with the classical period is the modern Tuareg alphabet, Tifinagh, which is certainly related to the Libyan alphabet of the early years of Roman occupation".

The characters of this North African alphabet are executed either isolated from or along with the representations of Saharan rock art. This writing system is diversely called "Libyan", "Numidian", "Berber" or Libyco-Berber" in addition to its descendent "Tifinagh" (Bates 1914: 85) (see Tables 30, 31 and 32 below). The Libyan corpus almost entirely consists of such inscriptions collected in Numidian (northern Tunisia and eastern Algeria) and in Mauritania Caesariensis and Tangitan (central and western Algeria and northern Morocco: that is to say the Maghreb) (Hachid 2000: 179).

The Libyan and/or the Tifinagh characters can generally be seen as simple geometric motifs (Hachid 2000: 173). As to the nature of these inscriptions, one can find the following:

> Libyan inscriptions are read from below upwards, beginning usually with the right-hand column, rarely with the left. Very rarely letters are in horizontal lines, to be read from right to left, as in the Thugga inscription. The derived Tifinagh may be written to be read →, ↓, ←, ↑, or even in a spiral or circle.
>
> (Bates 1914: 89)

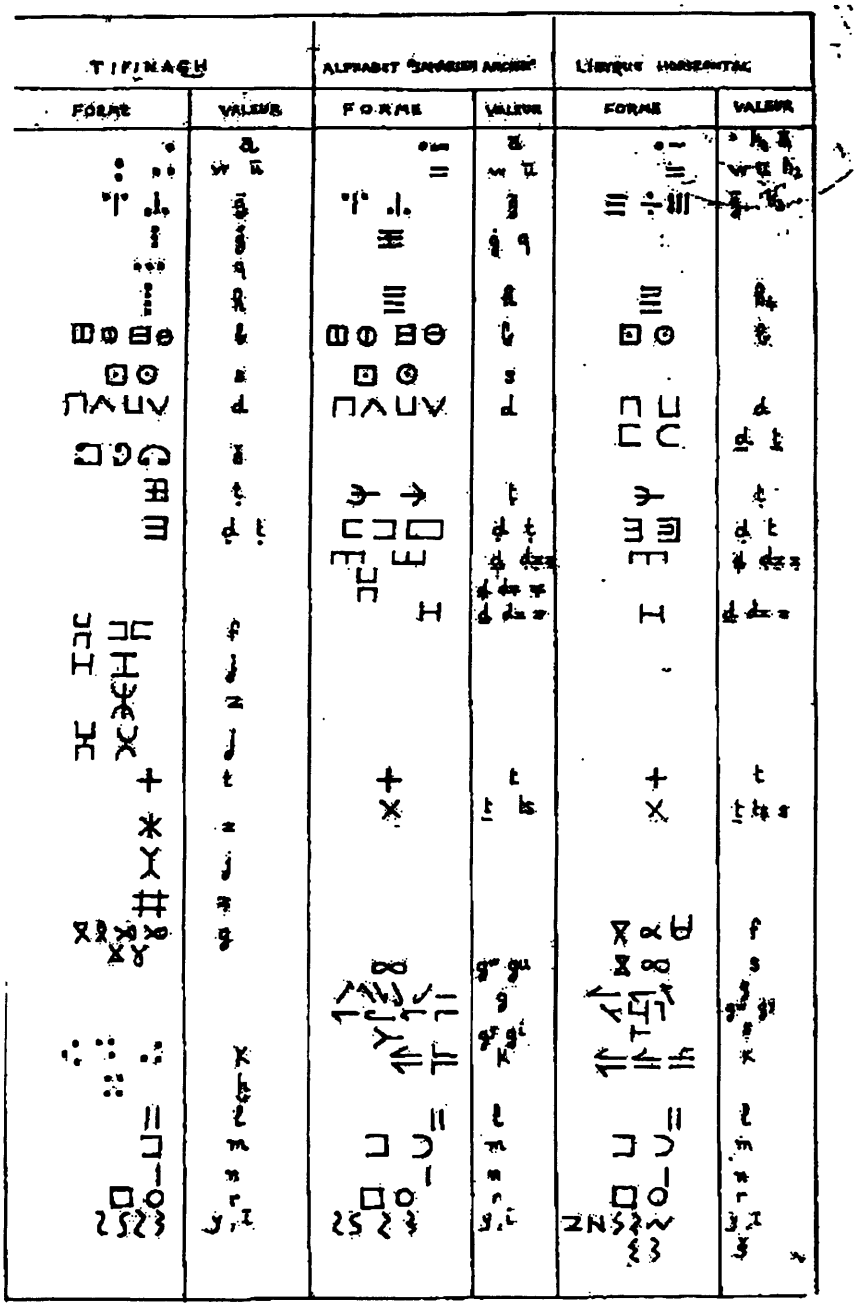
> The Libyan inscriptions are read from bottom to top while its disposition and orientation are very free and even fantasist and sometimes design beautiful boustrophedon. The difficulty of its deciphering resides in the complexity of its structure: the non-separation words, the non-notation of vowels whose function in the text is mostly diversified.
>
> (Hachid 2000: 179)
>
> (Translated from French)

> Among the many problems relating to the study of these texts [Libyan inscriptions] are the lack of firm rules governing the direction of the text (vertical or horizontal, left to right, up or down), the lack of clear divisions between words, the relative brevity of most text, the phonetic value of specific letter forms (and changes over time), and the meaning of words (and the potential problems relating to lost dialects).
>
> (Barnett & Mattingly 2003: 317)

Hachid (2000) attempted to throw light on the origins of Libyan script found alongside Saharan rock art. According to her, there are three possibilities concerning the origins of this script: either a loan from the Phoenician alphabet, or a local invention, or even a loan from an unknown ancient prototype from elsewhere (p. 173). She defends the idea of an autochthonous or indigenous origin of the palaeo-Berber script independent to the Phoenician variant to which it has been linked. In doing so, she refers to Sallustius Carispus who remarks that the Numidians spoke a language different to that of the Phoenicians (p. 179). Hachid also presents a number of possible etymological explanations of the term "Tifinagh":

> The term "*Tifinagh*" is the plural form of *tafinek* (in the phonological system of Berber, *gh* and *q* are the allophones of the same phoneme). It could signify "the Phoenicians or Punics" (*Punica*): it is on this etymological basis it was admitted that the Libyan alphabet was inspired in part or whole by the Punic writing system given that [...] six of its letters bear a strong similarity to the latter. This etymological argument is far from being convincing and has been refuted by Gabriel Camps [...] Other possible etymological explanations [...] have been proposed by Salem Chaker. The first explanation is that in Adrar des Iforas there existed the verb *efne* which means to write. The second explanation is the root FNQ is included in one of the denominations of the domestic Kabyle cupboard: *afniq* [which was] used as a coffin in the Punic and Libyan antiquity.
>
> (Hachid 2000: 183-4)
>
> (Translated from French)

In any case, most scholars agree that there are three forms of Libyan and/or Tifinagh alphabets: the Eastern, the Western, and the Saharan (see Tables 30, 31 and 32 below).

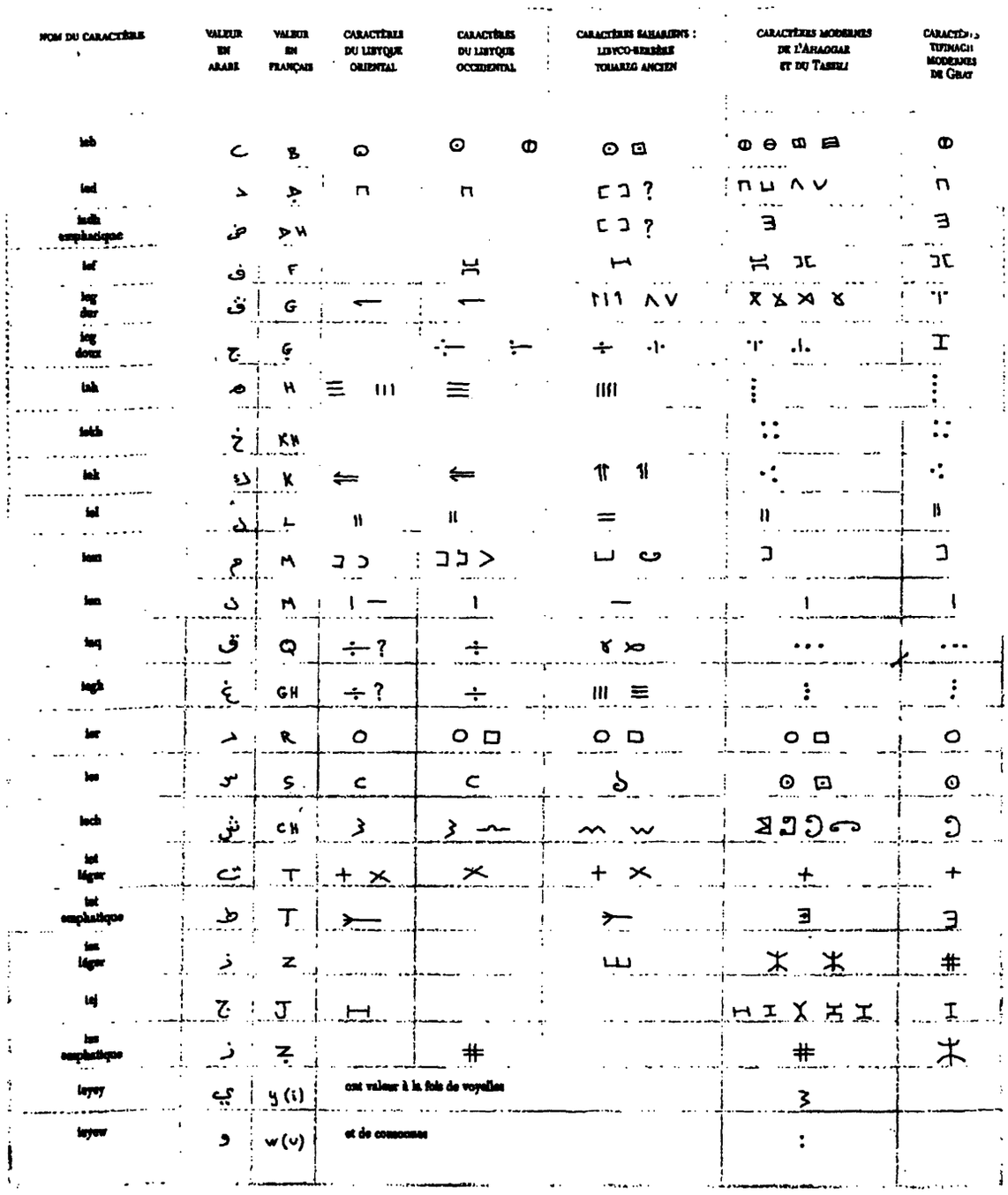


(Table 30)

Libyan, ancient Saharan and Tifinagh alphabet

(*after* G. Marcy)

(Mauny 1954: Tableau 1)

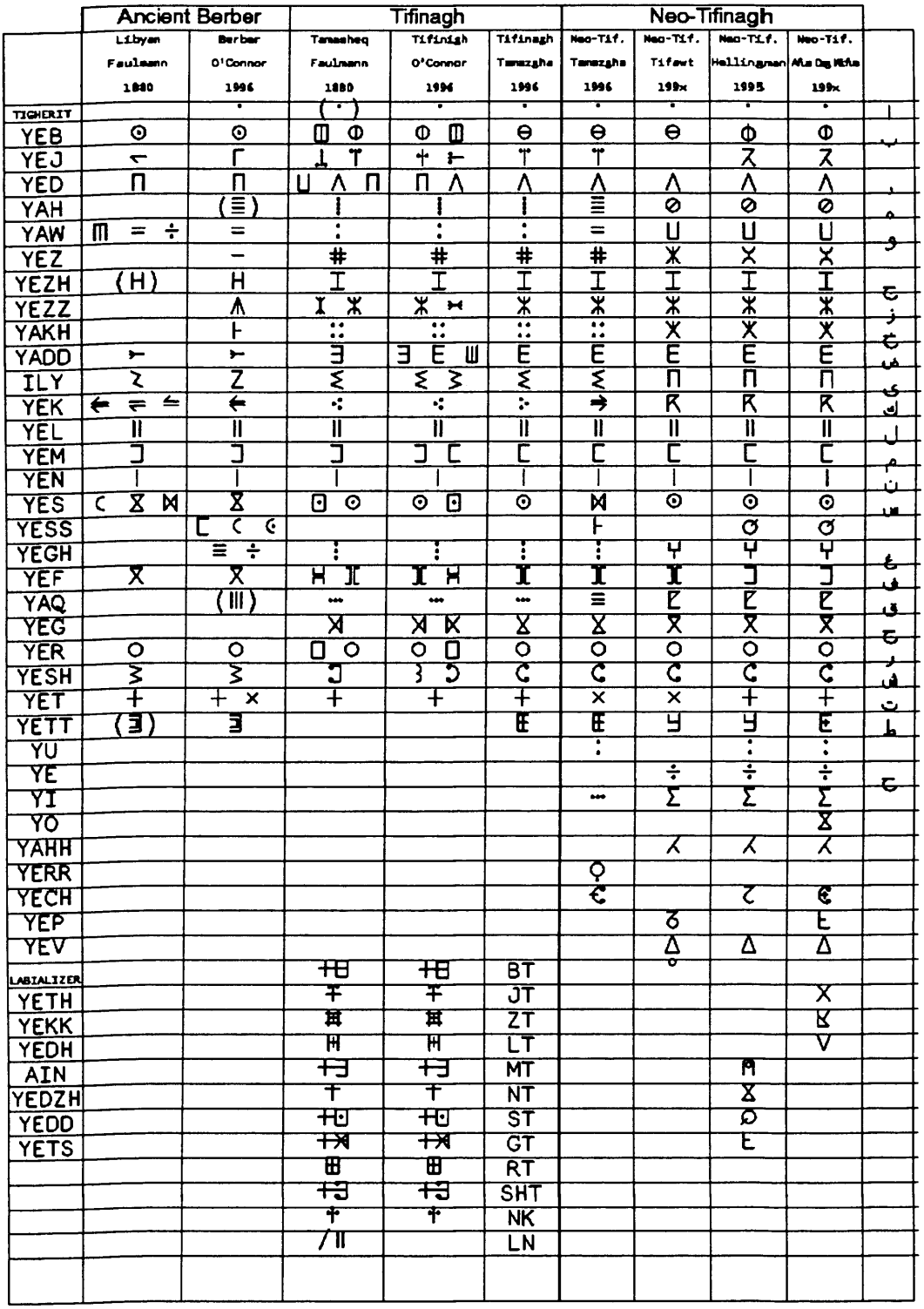


(Table 31)

Libyan and Tifinagh characters

(*after* K. G. Prasse)

(Hachid 2000: Fig. 276.1)



(Table 32)

A unified character set for Libyco-Berber and Tifinagh alphabet

(Everson: 1998)

Classical sources considered Eastern and Western Tifinagh as contemporary forms of the Libyan alphabet (Hachid 2000). The date given to the two forms according to these sources goes back to the third and the second century BC (for more dates see Table 33 below).

Lhote divided the Saharan alphabet into three groups. The most ancient group (which is presented in the Tassili, the Ahaggar, Adrar de Iforas, Adrar Ahnet and in the Air) is associated with a Caballian context (engravings of horses and bi-triangular equestrians with feathers holding a round shield and carrying a knife dangling from their arm). The inscriptions in this case begin with ⁝ = *ieh*, O = *ier*, and ⁝ (?). This ensemble, which bears the meaning 'I am in the trace of ...', is generally followed by a feminine name. The second group appears within a Camellian context and consists of characters that introduce contemporary Tifinagh since the Tuareg are partially able to translate them. The inscriptions of this group begin with the traditional formulation ⁝ = *iaou*, ⁝ = *ien* and ⁝ = *iek* which signifies *awa nek* 'It is I...'. The third group comprises the most recent or the contemporary Tifinagh (Lhote in Hachid 2000: 183). Yet, this chronological sequence can be easily criticised since the first Libyan characters that appear in the Central Sahara (esp. in the Tassili) are associated with wild animals (*e.g.* giraffe) motifs (*ibid.*).

After all, dividing or classifying the Libyan alphabet into three main divisions (Eastern, Western, and Saharan) seems to be artificial:

> "For a long period of time we claim that there was an "Eastern" alphabet for the Eastern part of the domain and a "Western" alphabet. This commode dichotomy does not in fact correspond to reality [...] and as Lionel Galand has demonstrated "we have to stop tracing a precise geographical limit between the two alphabets which are just like the faces of the same culture"- alphabets likely to correspond to language conditions that are as varied in these ancient times as they are nowadays" (Aghali-Zakara M. and Drouin J. 1997, p. 101). Hence, the generic term "Libyan" [...] comprised different alphabets with common characteristics: their expansion, however, both in time and space, resulted in the diversification of a part of the signs and their values.
>
> (Hachid 2000: 181)
>
> (Translated from French)

The three aspects of the Libyan alphabets, then, should be seen as regional variations in the characters of proto-Tifinagh. In other words, the difference between these three forms can be attributed to their diffusion and evolution through time and space.

For some (*cf.* Galand 1989), the hypothesis that the Libyan alphabet is derived from the Phoenician or even the Punic seems probable. This is because the invention of Phoenician goes back to 1300/1200 BC and it was distributed in the Mediterranean and Asia towards 1000 BC while most ancient Libyan inscriptions are posterior to the first Phoenician colonisation in North Africa which date to 1200 BC or even coincide with the founding of Carthage in *ca.* 814 BC (Hachid 2000: 184). Stéphane Gsell, however, shows that even if Libyan and Punic have many common characters, the Punic ones are generally cursive and are horizontally presented while the Libyan characters are angular, geometrical and vertically placed (Gsell in Hachid 2000: 184).

The emergence of Libyan inscriptions (in the Tassili) does seem to have been contemporaneous with two events: the invention of the Phoenician alphabet in the Mediterranean and the invasions of the "Sea People" who put the Eastern Libyans in contact with very diverse people coming from the Balkans, Asia Minor, the Levant, and the Aegean Sea. These two events seem to affect not only the Eastern Libyans (who made alliances with the People of the Sea against the pharaohs Mineptah and Ramses III in the years 1220 BC and 1177 BC) but also their cousins (the Saharan Libyans) (Hachid 2000: 188). This has put some researchers in the position of suggesting that Libyan script was at least influenced by Phoenician and Punic. In his analysis of Berber sources, Behrens (1986), for example, concludes that there is a link between the Berber languages and the Punic:

> As was shown by Vycichl some years ago (1952, pp. 198 ff.), the Berber languages of the Maghreb have preserved a number of words which, by the nature of their root structure, were borrowed from Punic. Punic was the language spoken in the Phoenician settlement of Carthage and its immediate vicinity. The existence of these Punic forms in Berber could be the result of either direct contact between the Phoenician colony and Berber-speaking populations or indirect contact – through the speakers of a third language who first maintained relations with Carthaginians and later Berber-speaking tribes.
>
> (Behrens 1986: 34-5)

In sum, the different waves of new population movement in the Mediterranean, by necessity, caused exchanges as well as cultural loans with the people of the Sahara or the proto/palaeo-Berbers (*e.g.* adopting new aspects of language and/or writing systems).

However, there are who opt for an autochthonous or local origin of the palaeo-Berber script independent to the Phoenician or its Punic variant to which it has been linked. In this respect, Bates (1914: 73) considers Berber as an old indigenous Afro-Asiatic speech which, at the same time, has many loan-words from the Phoenicians, Greeks, Romans, sub-Saharan Africans, and Arabs. Chaker believes that the Libyan inscriptions are known without being preceded by intermediate stages that could represent a transition or a progressive evolution of the Libyan from a Phoenician or Punic model (Chaker in Hachid 2000: 184). As Hachid (2000) notes, there are in the Atlas geometrical signs that marked the rocks including signs very similar to the geometrical decoration of contemporary Berber art (*e.g.* weaving and tapestry, pottery, woodcarving, tattoo, wall-paintings, and forms and decorations of jewellery and ornaments). This led her to see these signs as "real ideograms, symbols, sort of written form at birth that carried meaning" (*ibid.* 185) (Translated from French). She also refers to the geometrical signs found at Tebessa (north-east of Algeria) claiming that they are identical to the signs that were used to decorate the Epi-Palaeolithic Capsian's ostrich's egg-shells (*ibid.*).

A comparison based on the structural and cultural aspects of the Libyan and the ancient Egyptian inscriptions also shows major differences between these two writing systems. The most important points of difference detected in the two forms are as follows:

Saharan (Libyan) inscriptions	Ancient Egyptian inscriptions
• very short • they do not try to precede the meaning of the images to which they are associated • the proto-Berber and palaeo-Berber society, as it appears in the paintings, gives privilege to a figured message: the message of the representation of a social elite and its ideology of power; among the palaeo-Berber Garamantes only this elite could possess the horses, chariots or metal • these inscriptions are very likely to express the idea of leadership, authority and social class • in its turn, this writing was considered an instrument of prestige reserved to this elite • these inscriptions could give the name of the owner, the title of a chief or a clan, for instance	• longer than the Libyan • they carried important messages with a religious dimension • the hieroglyphs, for instance, are the smell of the divine speech and because of that they are translated as "Sacred Letters" • by designing as hieroglyph, the Scribe (the ancient Egyptian writer) gave it life. • during the antiquity, the writing was not for everyone: in Pharaohs Kingdom, it was estimated that only 1% of the population knew how to write

(Table 33)

Some major differences between the Saharan and the ancient Egyptian inscriptions

(Based on Bates 1914; Hachid 2000)

The differences in both structural and cultural aspects shown in the table above stand against the early views which ascribed the Libyan to Egyptian sources (for such assertions, see, for instance, M. de Saulcy in Bates 1914: 85, and also Bullard 2001: 184). These variations, then, can be taken as an indicator of the autonomous origin of the Libyan independent to the Egyptian.

Indeed, it is extremely difficult to know when and where the characters of the Libyan alphabet made their first appearance. However, the dates given to the Libyan inscriptions discovered in the different regions of the Sahara indicate an ancientness of this script. Brett and Fentress (1996: 209) believe that the Libyan alphabet "Possibly [...] arrived with the first Mediterraneans in the desert, the Garamantes, around the middle of the second millennium BC". The following table shows a number of dates given to these inscriptions:

Attributed Date*	**Site/Inscriptions**	**Location**
The second half of the second millennium BC (1500-1000 BC)	The first Libyan inscriptions (the palaeo-Berber Garamantes)	The Central Sahara (Hachid 2000: 187)
Between 1300 and 1200 BC (the date 1200 BC marks the highly probable emergence of the first Libyan inscriptions)	Inscriptions associated with palaeo-Berber depictions (mainly chariots with horses: the bitrianglar Graramantic paintings)	Tassili (Central Sahara) (Hachid 2000: 187-9)
Posterior to the period of chariot and horse (before the appearance of metals)	Libyan inscriptions (linked to Western alphabet or ancient Saharan characters)	Saharan Atlas (Hachid 2000: 184)
Anterior to the 600 BC	An engraved anthropomorphic Cartouche in which are inscribed 15 to 16 Libyan characters along side the iconographic context which comprises a large number of representations of metal weapons (Bronze Age)	In Azib n'Ikkis (the Yagour, High Moroccan Atlas) (Hachid 2000: 181)
500-300 BC	Stele with Libyan inscriptions	Tiddis (Eastern Algeria) (Hachid 2000: 181)

Before the classical sources (*ca.* 300 BC)	A burial place including sherds of pottery with inscriptions in Libyan characters	Tiddis (Eastern Algeria) (Hachid 2000: 181)
From the first century AD	Amphoras engraved with Saharan (regional) alphabets	Central Sahara: Getules and Garamantes territory: Djerma (Fezzan) (Hachid 2000: 181)
The classic Garamantian period (1^{st}-4^{th} century AD)	Inscribed offering tables and stele	Wādi al-Ajāl (Fezzān) (Barnett & Mattingly 2003: 321)
The second century AD	Particular Garamantes alphabet	Bu Njem (Tripoli) (Hachid 2000: 181)
The second century AD	Inscribed personal artifacts recovered from tombs	Sāniat bin Huwaydi (Daniel in Barnett & Mattingly 2003: 321)
At least the fifth century AD (the recent Tifinagh)	'Tin Hinan' characters: inscriptions found on the blocks used in the reconstruction of Tin Hinan tomb (a legendary queen or a noble woman of the Beraber tribe); characters in recent Tifinagh	Oued Tiffert near Abalessa (Ahaggar) (Hachid 2000: 181) (Keenan 1977: 18)

* The authors do not give radiocarbon evidence to support these dates. Thus, they cannot be considered absolute, but relative based on associated artifact typology.

(Table 34)

Chronological sequence of a number of Libyan inscriptions discovered in the Sahara

Hachid (2000: 190) summarises the evolution of this writing system as follows:

1- The early geometric signs/characters which may constitute the first forms of the Libyan alphabet (before 1300 BC)
2- The Libyan alphabet which very likely appears towards 1300 and 1200 BC
3- The ancient Tifinagh which was forcibly in place before the first century BC
4- The recent Tifinagh which was evolved from the ancient one at least in the fifth century AD

The Libyan script disappeared in North Africa probably at the end of the Roman domination towards the fifth century BC. However, the Tuareg of the Sahara and the Sahel have preserved this writing system (*ibid.* 181). However, the Tuareg, as Keenan (1977: 321) wrote, "have no written language, and consequently no written records of their own. A script, known as Tifinagh, exists but is used very limitedly". In the same context, it also is interesting to relate that:

> Tifinagh is taught by the mother to all her children, but the decoration of household objects with short Tifinagh inscriptions with magical significance is the work of the women alone; this aspect of Tifinagh is worth stressing. Although like all writing it conveys language, in fact its use is intimate and symbolic, rather than generalized and public. It is an alphabet for love letters, for secrets and for charms, but not for proclamations and literature. The alphabet carries with it a private discourse, closer to (but not exclusively for) the women's world and the home than to the external contacts of the men.
>
> (Brett & Fentress 1996: 212)

As to the relation between Libyan inscriptions and the different aspects of material culture (including rock art), Barnett & Mattingly (2003) give three possible explanations:

> Distinctions can perhaps be drawn between the use of Libyan texts in connection with rock-art, those on funerary structures, and those found on portable artefacts. Each category appears to be serving a rather different function potentially: in the former case a spiritual negotiation, in the second instance most likely as a form of personal commemoration, and in the last example as a way of denoting ownership.
>
> (Barnett & Mattingly 2003: 324)

The presence of and the similarities in the geometrical motifs of different phases of the Saharan corpus could be taken as indications of the following:

1- an existence of a proto-Tifinagh type; these ideographic and iconographic elements gradually or progressively contributed to the establishment of the Libyan script/language, and consequently;
2- probable autochthonous origins of the palaeo-Berber script independent of the other writing systems;
3- an 'ethnic' Berber continuity (proto-Berbers, palaeo-Berbers, modern Berbers) in the Saharan region from the Capsian (7,000 BC in the Maghreb) via the Middle Neolithic (the proto-Berber Bovidians in the Sahara from 5000 BC) to proto-historic and historic times (the palaeo-Berber Garamantes,the Caballine and Cameline periods, the Modern Taureg, and the Arabo-Berbers or the Moors)

VI.3 Speculations on the cultural historical associations of the northern Atar engravings:

The comparisons and discussions made in sub-sections *VI.2.1* and *VI.2.2*, this chapter, led us to conclude that the engravings of Foum Chor and Ahel-Ebdemmed evidently belong to a deeply rooted culture: the Berber/proto-Berber (sub-sections *VI.2.2.2.2: 1*, *2*, *3* and *4*: *1-3*). What we need, then, is to explore some aspects of the cultural history of northern Atar region via these engravings.

As we have seen in sub-section *VI.2.2.2.1*, this chapter, the engraved cattle of northern Atar (the most ancient) share spectacular similarities with those of the sub-Saharan zone of Morocco and particularly with those of the Western Sahara (Seguiet el-Hamra and Rio de Oro) (compare Figs. 53a: 1-7 with Figs. 129 and 131). This leads us to perhaps securely link cattle pastoralists of northern Atar with those of the north.

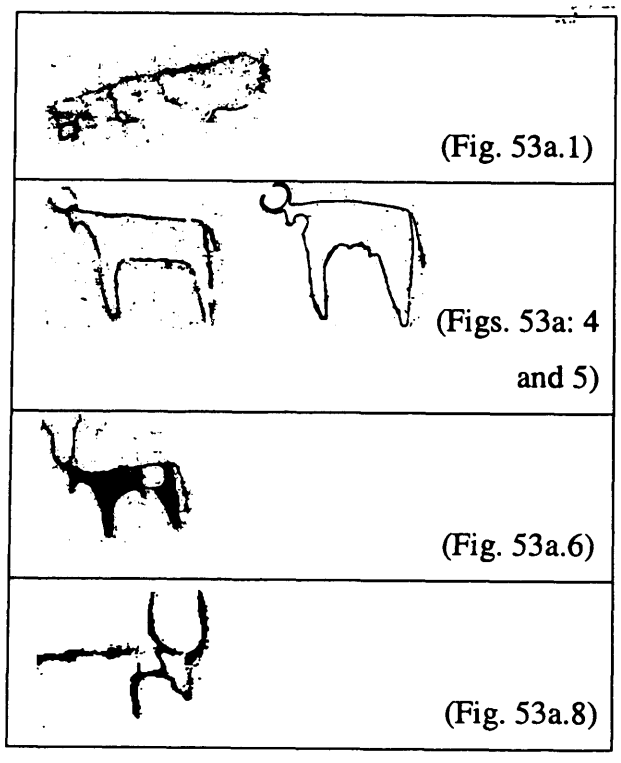
In his study of the rock art of El Rhallaouiya (about 300 km north-east of Atar in the Mauritanian Adrar, Map 3), Vernet (1996: 135) concludes that the cattle herders of this area arrived -in successive waves- from the north: from Morocco via the reliefs and depressions of Oued Draa to the Adrar, or via Saoura along the cliffs of Hank to El Rhallaouiya in the south; and from there they spread towards the western Mauritania (see Maps 6 and 17). In our case, we exclude the second possibility (*i.e.* via Saoura) since the similarities detected and the geographical distributions indicate a western connection (*i.e.* via Oued Draa).

We also saw that the rock art of northern Atar includes a considerable number of signs and symbols (with different levels of patina) some of their characters resemble those of the Libyan and/or Tifinagh alphabet. It is reasonable, therefore, to attribute the engravings of northern Atar to the Afroasiatic speakers (the proto/palaeo-Berbers and their successors: the Arabo-Berbers or the Moors). One, thus, can observe a Berber ethnic and cultural continuity in Atar region from the Neolithic to the historical times (from cattle to camel).

From the chronological point of view, the engraved cattle of Foum Chor –in any case- cannot be posterior to the date 4000 BC, where cattle herders are archaeologically documented as arriving in the western part of the Sahara after a dry period of some centuries approximately 4200-4000 BC (see Vernet 1993: 229, 1996: 132-134, and also Hassan 2000; MacDonald 2000). It is difficult, however, to know whether or not the 'bovid' engravers of Foum Chor were a part of the first groups of the cattle herders who came to the region from the north. In our case, it is risky to follow Vernet's (1996: 134) view that the bovid depictions of El Rhallaouiya perhaps belong to a second wave of cattle herders who arrived due to increased humidity towards 3500-3000 BC. This is simply because there was another improvement towards 2800 BC (*ibid.* 134) to which these engravings could just as easily pertain. This view can also be supported by the fact that there are major differences in form between the represented cattle of the two sites under discussion (compare Figs. 53a: 1, 2, 3, 4, 5, 6, 7 and 9 with Fig. e) (for more examples of El Rhallaouiya's bovid engravings, see also Figs. 9-12 inVernet 1996). Finally, in the light of the dark patina of the represented bovids it is unlikely to attribute the bovids of Foum Chor to the period after 2000 BC when the desertic climate expanded and only the coastal Chami and the

oasis-like Tichitt region were inhabited by pastoralists (Vernet 1996: 134). At this point, Camps (1982: 618) wrote "[...] in the Sahara, the last two millennia were a long, slow agony in which the water sources and grazing were reduced to such a point that the brilliant Bovidian culture disappeared". Here, emphasis can be made on the observation that the precision of the technique(s) employed in executing these bovids indicates an ancientness; they where probably depicted at least before the degradation of the rock art tradition which is contemporaneous with the desiccation of the climatic conditions (*cf.* 2000 BC onwards) (compare the engraved cattle with other depicted animals of the same site).

It is also interesting to note that at Foum Chor site there is perhaps more than one phase of the bovidian engravings -though all of them have the same dark dapatina of the rock (see Chapters 4 and 5). The following table shows the extent to which the engraved cattle of Foum Chor could belong to (at least four) different phases.



(Table 35)
Typology of Foum Chor cattle

In view of this, the depicted cattle can be taken as an indication that the bovidian population (the cattle herders or the pastoral nomads) probably came to Foum Chor in successive waves from the north (*i.e.* southern Morocco and the Western Sahara) via the reliefs and depressions of Oued Draa during the Late Holocene.

It seems probable that these cattle pastoralists (and the equestrian population of Ahel-Ebdemmed as well) where not 'pure' nomads since "The horse and cow [...] are inappropriate for long-distance travel in the waterless desert" (Brett & Fentress 1996: 205):

> Always a *topos* among historians of the Maghreb, the existence of fully nomadic pastoralism in antiquity is usually now denied, even for the Roman period [...] Nomad pastoralism is always dependent on the existence of agriculturalists. It is clear that nomad pastoralism normally develops out of mixed farming and herding'[2] [...] no society really lives without cultivated grain. Therefore, in order to move from transhumance (where cattle are moved away from a settled village to winter or summer pasture) to full nomadism (where the whole community travel together away from its winter base) there must first exist a settled society of agriculturalists from whom the nomads acquire their grain – by fair means or foul.
>
> (Brett & Fentress 1996: 203)

'Pure' nomadism, as Brett & Fentress (1996: 202-3) explain, implies "full mobility for the whole society and its flocks, and an economy in which agriculture plays no part". In the Mauritanian Adrar, where the study area lies, Gerteiny (1967) identifies two types of nomadism:

> Two of the three distinct types of nomadism are evident in arid Adrar, where camels, sheep, and goat constitute the main forms of wealth. Over the entire *cercle* [...] *grand nomadism* is evident-a nomadism of the most strenuous type, limited to those who travel by camel. *Middle nomadism* [...] is evident in the southern areas of the *cercle*, where the relative closeness of watering points permits goat and sheep herding. The third type of nomadism [...] *light nomadism*, refers to a style of living that involves the herding of cows. Since cows are slow-moving animals, the distance between watering points limits herding to areas where water is more abundant than in the Adrar. Cows cannot withstand prolonged period without a minimum intake of water.
>
> (Gerteiny 1967: 14)

In any case, the Moors or the *bīdān* who inhabit Azougi village and neighbouring areas could be classified as "semi-nomadic pastoralists" since they live in relatively fixed settlements and practise some small-scale agriculture (small gardens: palm groves at the foot of plateau (see Figs. 1, 2 and 2a), millet, sorghum, barley, watermelon, tomatoes and some green vegetables) and spend part of the year in a nomadic way to secure the pasture required for grazing their domestic animals (mainly goats). Even camel herders themselves used to live for a part of the year in simple huts side-by-side with those who live in fixed settlements, where the latter provide the former by their agricultural products.

As attested by the dark patinated abstract or Tifinagh-like signs executed along with the engraved bovids, the pastoral cattle herders of Foum Chor were of Berber origins. They were possibly the descendants of the proto-Mediterranean physical type that was responsible for the Capsian civilization (*cf.* Camps 1982). The different types of the presented bovids indicate that these cattle herders probably came to northern Atar region in successive waves from the north (southern Morocco and the Western Sahara) via the reliefs and depressions of Oued Draa during the Late Holocene.

Changing in "artistic" style (from a tendency to semi-naturalism to stylisation to schematisation), in "technical" style (from pecked outlined large size to fully pecked small size animals), and in thematic content as well (from 'cattle' to 'wild animals and horses and camels' to 'non-representational art or abstract signs') - all these changes support the view that cattle pastoralists were replaced by an equidian and camellian population due to increased aridity (see also previous chapter). These two animals (the horse and the camel), without doubt, allowed the re-occupation of this region. The replacement of cattle by horses happened not immediately but gradually in the Mauritanian Sahara. This is evident by the fact that bovids are depicted in Mauritanian rock art harnessed or attached to chariots or carts (see sub-section III.2, Chapter 1, and for more examples see, for instance, Lhote 1982; Mauny 1970a). This phenomenon among the ancient Saharan populations is well explained by Camps (1982) who relates:

> The most of the paintings depict cattle harnessed to chariots and are, thus, contemporary with the Equidian style which cannot be earlier than the mid second millennium BC. The Bovidian phase came to an end when the growing scarcity of grazing and the decreasing number of water sources forced the large-scale stock-herders to retreat to the west and south. They were eventually, though not immediately, replaced by people who have been called Equidians or Cabalines who introduced the horse into the Sahara (Lhote 1953). It seems likely that these Equidians did not drive out the descendants of the Bovidians but rather that they mixed with them and became a ruling caste.
>
> (Camps 1982: 580)

As to the non-representational motifs, we saw that there are similarities in the characters of a number of the abstract signs and/or geometric motifs of northern Atar and those of Libyan and Tifinagh inscriptions. My guide Sheikh Bomb and the inhabitants of Azougi (northern Atar) look at these signs as ancient *Alamat* (marks) of the local Mauritanian clans/tribes. In this connection, they identify eight of these abstract signs and/or geometrical motifs as follows:

Sign	Local name of Sign	Tribe/Clan
	El'Nakl (El-Nakly)	Oulad Ghaylān (al'Achiakh): E'Shaykh Ma' el-Aïnīn
	El-Habbar (El-Habbara)	Edishel and Samacides
	Al'Kayed	Ahel'etshak el khatati (Techfakat'el-Khatat)
	Al'Swebet (Swayba)	Laghlal and Idwa Ali
	An	Ahel Abah
	Dal	Ahel Barikallah
	Tboset	Adebosat.
	El-Tahad	(Not given)

(Table 36)

Tribal/clan marks (*Alamat*) identified by the local inhabitants of Foum Chor

Brigss (1960) describes the first clan listed above *(Ma' el-Aïnīn)* as one of the most powerful holy Moorish families which are practically dynastic in character:

> The most famous and also the most influential of these is the family of El Ma el Ainin ("The Water of the Twin Springs") who lives in the northern part of Moorish territory.
>
> (Briggs 1960: 218)

The historical importance of this tribe goes back to the prominent role of its main venerable and influential religious leader Shaykh Ma' el-Aïnīn who sustained a long-term fierce resistance against the French colonisers in Mauritania or *trab-le-bīdān* and "infidels" plans on the Senegal basin (from 1890 until his death 1910). His headquarters were in Seguiet el-Hamra (Rio de Oro) and his influence as both religious and political power extended to greater northern Sahara, including southern Morocco and most of the Adrar (Gerteiny 1967: 103). Ma' el-Aïnīn, with his Almoravidic ambitions and spiritual charisma, was also responsible for arranging or settling peace between the various Mauritanian tribes (such as that made between the Rigaibāt and Oulad Ghaylīn in 1904 to bar the French from Adrar) (*ibid.* 107). The Ma' el-Aïnīn tribe, in short, is infamous for proclaiming a holy war (*jehad*) which lasted over thirty years against the French presence in Mauritania (Puigaudeau 1937: 90).

As to *Ahel Barikallah* who are identified by the sign  , they present "a major monastic confederation of tribes originally from the Tiris area [who] their eponymous ancestor lived during the second half of the seventeenth century" (Gerteiny 1967: 18). They emigrated from the Tiris in an unknown year to the Inchiri and Trarza, in order to put a stop to localised fratricidal warfare.

In addition to those already mentioned in Table 36 above, the inhabitants of Foum Chor gave another 8 signs which are not present among the recorded engravings:

Sign	Local name	Tribe/Clan
	An	Laghlal
	Not given	Al Rokaybat (The Rigaibāt)
	El Yai	Messufa
	Mah	Ahel e'Shaykh Ould Amen
	El Hay	Knt (Kunta)
	El Khatma	Ahel-Bulbshat
	El Khai	Ahel-Abbat
	Akanbour	(Not given)

(Table 37)

Other tribal marks provided by the local inhabitants but not present on the recorded work

The Rigaibāt is also considered one of the Moorish Shorfa (holy) clans. Regarding them, Briggs (1960) writes:

> Shorfa clans still survive [...] among the more Arabized Moorish tribes and divisions, and it is probable that some of them at least have valid claims to descent from the conquering Arabs who introduced Islam into the western desert. Curiously enough it seems that the majority of Moorish Shorfa clans are still basically Berbers except for their religious quality, and they also appear to be characterized by a strangely fervid spirit which one ordinarily associates only with very recent converts. The Rguibat tribes in general claim to belong to one huge Shorfa family and they are generally treated as such, although it is well known that the Rguibat as a whole are actually no more than assemblage of heterogeneous groups which became united in their present form only a little over two hundred years ago. The semi-mythical ancestor from whom they took their name was Sid Ahmed-er-Rguibi, a pious man who is said to have come from Barbary in 1503 or thereabouts as a Moslem missionary to the valley of the Draa in southernwestern Morocco.
>
> (Briggs 1960: 231)

The Messufa, as mentioned in sub-section *VI.2.2.2.2.2* above, was one of the loose Sanhadja confederations of tribes that had played a vital role in assisting their northern Berber brothers against the Arab conquerors during the seventh and eighth centuries (Gerteiny 1967: 23)

The Kunta confederation of proud pastoral tribes are basically localised in northern Tagant and the Eastern Hodh (part of the Sudanese Sahara) (*ibid.* 9, 98). Their domain crosses the Mauritanian-Malian border (*ibid.* 80). They are "skilful poisoners; in fact, they are known to have special schools on methods of poison and magic, and some of their tribes are reputedly rife with sorcerers" (*ibid.*).

It is worth mentioning here that E. Paris (1953) has studied a considerable number of signs and/or geometrical motifs which are still in use by Mauritanian tribes/clans as animal brands, "*feux*" (Table 38 below illustrates these signs or *Wesms*).

(Table 38)

Wesms or animal brands (*Feux*) used by Mauritanian clans

(Paris 1953: Table 3.2)

It is noteworthy that the characters of a number of these brands (studied by Paris), and of those recorded in northern Atar as well, are similar to those of the Libyan or Tifinagh script (see above). Regarding the former, Paris (1953: 1621) noted that many

brands among the Moors of Mauritania seem to take their source from the Libyco-Berber alphabet. He gives an example of the '*Swayba*'  , the brand which characterises Aid and Ali (see Table 36 above), considering that the origin of this brand shows itself in the ancient Garamantic rock art (*ibid.* 1624). During the survey conducted in Azougi, I was able to detect a *wesm* (T-shaped sign: *al'Nakl* or *el-Nakly*) branded on the lower part of a dromedary's neck (Figs. 127, 128). Further investigation showed that the branded camel is owned by a member of al'Achiakh tribe/clan. According to Sheikh Bomb (the local guide): "The *Alamat* (signs) in this land are for the people of knowledge; they place a sign on their animals in order to identify them". These signs (whether they are branded on animals or engraved on rocks), therefore, can be seen as a part of symbolic dialogue between different clans/tribes.

The Foum Chor's unpatinated Arabic inscriptions such as 'Allah', 'Muhammad', and 'el-Hussein' (Northern Face); 'Immortality of Allah' and 'Khalil' (Eastern Face); 'Sharaf' (Western Face); and 'Zaid' (in a close proximity to the engraved bolder) seem to be of a very recent date and most if not all of them are probably the work of the present-day inhabitants. The importance of such inscriptions, however, lies in the fact that they clearly indicate the Arabisation and/or Islamisation (the adoption of Islam and Arabic customs) of northern Atar inhabitants who --like three-quarters of the Mauritanian population—are Moorish (Arab-Berbers) and speak Hassaniyya dialects of Arabic (see sub-section *VI.2.2.2.2.2*, this chapter). In this regard, we remember that

> Arabic gradually became universal in Egypt and dominant in the Maghreb, where today Berber is spoken by only 1 per cent of the population, mainly in the mountains and on the desert edge
>
> (Isichei 1997: 172)

> Arab influence on Moorish culture seems to have been greatest in the field of language, for most of Moors now speak a form of Arabic which is remarkably pure on the whole although characterized by the retention of various Berber expressions and turns of phrase. Practically pure Berber still survives, however, here and there, mainly among scattered Maraboutic vassal groups which become numerous the farther south one goes, and whose members are usually bilingual, in Berber and Arabic [pp. 213-4] Maraboutic clans are the principal guardians of

> pre-Islamic Berber speech among the Moors [...]; and this, and their usually tributary vassal status, together with their concentration in the south, suggest that they may well be relatively pure remnants of Berber tribes that were conquered at the time of the Arab invasion of the northwestern desert [p. 232].
>
> (Briggs 1960: 213-4, 232)

The inscriptions in French or Latin characters 'VI^{e} SIECLE', 'A', 'S', 'SI', and 'VIVE CHEIKA', which are engraved on the southern and Eastern Faces of Foum Chor rock (Figs. 22a: 1 and 4; 28a: 2 and 5), may stand for the European contacts and/or the French colonial period. Contrary to what one may assume (as attested by the inscription itself: 'VI^{e} SIECLE'), the author tends to place this inscription in a very recent date. It is probably executed during the period of the French occupation by a soldier or even by a foreign traveller. This suggestion can be supported by the fact that the patina of the French inscription is lighter than that of the two signs/marks engraved in close proximity on the same face of rock (Figs. 22a: 2 and 3). In this regard, we should also keep in mind that the early French presence in the Mauritanian territory (Arguin on the Senegal River) is not known before the second half of the nineteenth century while the Portuguese presence goes back to the fifteenth century (for a thorough account of the early European contacts: the Portuguese, the Spaniards, the Dutch, the French, the English; and of the French occupation of Mauritania, see Gerteiny 1967: 36-45, 102-115 and also El Hady n.d. 129-133, 155-190):

> [The present-day Mauritania or] The Trāb le-bīdān [(the land of the whites) as the Moors themselves referred to and as it was also known as Shinqīt [from the Azēr Si-n-gede] in North Africa and the Arab world from the fifteenth to the twentieth century] was first visited early in the fifteenth century by the Portuguese, who sought gold and slaves, knowledge and adventure. By the middle of the century, the island of Arguin was discovered by Nuño Tristao; it became a center of exchange between the Moors and the Portuguese and the site of a military fort. From there, the subjects of the Infante Henry the Navigator penetrated deep into Adrar and reached Wadane, where they established an important commercial centre (p. 37) ... [From March the 5th to June the 14th 1860, Captain Vincent, one of the French governor of Senegal, Louis Faidherbe's close collaborators] covered some 400 miles, bringing back enough information and knowledge about the land and the people of Mauritania to enable the French Army, commanded by Gouraud, to carry its mission, fifty years later, into the heart of Adrar [p. 43].
>
> (Gerteiny 1967: 37, 43)

From what is mentioned above, we can be certain that none of the inscriptions in Latin and French characters recorded at Foum Chor site (*i.e.* 'SI', 'VIVE CHEIKA', and 'VI^{e} SIECLE') can be dated prior to the fifteenth century, the earliest date of the European contacts in Mauritania, in general, and in the Adrar, in particular.

As to the engravings of Ahel-Ebdemmed, where horses constitute the most numerous of the motifs, it is useful to mention that there are two alternatives regarding the introduction of horses into West Africa: either across the Sahara from northern Africa or across the Sahel from the Nile valley; the first possibility is greater since the representations of horses in the rock art of eastern Sahara are rare (Law 1980: 2). Evidence of horses in arid West Africa goes back to the late fourth century B.C. (*ibid.*). MacDonald & MacDonald (2000), however, consider the date of the first half of the first millennium AD as the earliest date for the introduction of the horse to sub-Saharan West Africa. In any case, the frequent representations of horses in rock art suggest that they were considerably exploited in the western and central parts of the Sahara. They went into common use as a means of transportation through the desert only at the time of the spread of the camel during the first half of the first millennium of our era (Law 1980: 2).

Following Lhote's (1961) conventional devisions of the Horse Period, we attempt here to place the Ahel-Ebdemmed equids within one of the four sub-periods or the cultural historical context (1,200 BC - AD 300?): "Chariot sub-period" (1,200 BC - 400 BC), "Horsemen sub-period" (400 BC? - AD 100), "Horse and camel sub-period" (AD 100? –AD 300), and "Camel Period" (from AD 300) (see also Willcox 1984: 38-41).

The complete absence of chariots prevents us from associating these depictions with the "Chariot sub-period". As mentioned before, there are a number of signs (some of them have similar characters to those of Libyco-Berber and/or Tifinagh alphabets) are engraved along the depicted equids (see Fig. 97b); such characters –as Lhote (1961) claims- made their appearance in the "Horsemen sub-period". Attributing the engravings under investigation to the "Horsemen sub-period", however, also seems less probable since they are not mounted by riders. Placing these equids within the "Camel period" is not without a risk especially as no dromedaries are represented

among the motifs of the site and none of the represented horses is depicted with a stirrup saddle of the Arab type (see Lhote 1961:140). By conventional chronology then the equids of Ahel-Ebdemmed can be tentatively dated to the "Horse and camel sub-period" (AD 100? –AD 300).

If one adopts the idea that the final abandonment of the village settlements of Dhar Tichitt, in the southern Mauritania (occupied between *c.* 1000 and *c.* 400 B.C.) may have been due to the invasion of putative Berber horsemen that appear in the rock art of this region (Munson in Law 1980: 3), then, it is possible –in such a case- to conclude that horse representations of Ahel-Ebdemmed probably date to the period from the second half of the first millennium B.C. (*cf.* 400 BC) to the early first millennium A.D ... the time that the palaeo-Berbers and Berbers expanded their 'homeland' over a great part of the Sahara. The three unpatinated horse engravings (*i.e.* those of the fourth group: Fig. 112), however, leave us with not much doubt that they are probably of a late (historic) and not early (prehistoric) date. They seem to be either the latest (most recent) depictions or a contemporary 'fine' copy (replication) of the earliest ones (i.e. those of the first group: Fig. 101).

As a final point, the first half of the first millennium AD seems to be the most probable date of Ahel-Ebdemmed horses since:

> It was only much later that the horse appears to have been introduced into the west, that is to say into Mauritania, and to have adopted by the population of that region; these people also differed from the others in regard to their weapons, since they carried spears and did not have a knife dangling from their arm. Furthermore, it seems that with the advance of the Arabs the use of horses became general, an assumption confirmed by the appearance of the saddle with a support for the back.
>
> (Lhote 1961: 163)

The phrase "with the advance of the Arabs the use of horses became general" in the above statement, however, still implies the possibility of pre-Arabian affinities of the represented horses (*i.e.* before the Arab conquest in the seventh and eighth centuries). According to Camps (1982):

> This animal (the horse) had previously been unknown in North Africa and has now completely disappeared again from the desert but has left behind two vigorous strains – the so-called Dongola strain and the Barbary horse of the Maghreb. In profile, the head shape of both these types is convex; they are not at all graceful (particularly the Dongola), their heads are heavy, their hindquarters low and they are short in stature. But they are very resistant, hardy and full of courage and their adaptation is so good that they have survived and preserved their characteristics in the face of multiple introductions, in particular of the eastern, so-called Arab, horses.
>
> (Camps 1982: 620)

Taking into account the above statement, we may realise that the horses of Ahel-Ebdemmed are not Arab. From the morphological point of view, the engraved equids seem to have the characteristics of the Barbary horses of the Maghreb; these horses, which are depicted in profile, generally show convex, heavy heads, low hindquarters, and are short in stature.

Yet, if these horses really only belong to the Arab invaders/population who came form the east or the Nile valley, then, why do we not discern even a single Arab inscription instead of these signs that resemble some Libyco-Berber and/or Tifinagh characters? Other evidence shows that "The Arab breed is of limited importance in West Africa, being found in more or less pure form only in the southern Sahara, among the Moors of the Tagant area of Mauritania and among the Tuareg of the Air mountains in the Republic of Niger" (Law 1980: 24). Regarding the Arab breed being found among the Mechdouf Moors of the Tagant, Law (*ibid.* 44) adds: " this breed, said to be descended from horses captured from Arab peoples further north in the desert during the sixteenth century, is a variety of the Barb strongly influenced by Arab blood". In sum, attributing the engraved equids of Ahel-Ebdemmed to a Berber speaking population (pre-Arabisd) is more probable since no Arabic inscriptions have been recorded from this site, on the one hand, and the depicted equids resemble the Barbary horses of the Maghreb, on the other hand.

The represented signs seem to be the key point in classifying the depicted equids both linguistically and culturally. As we already saw, the characters of these signs resemble those of the Libyco-Berber and/or Tifinagh alphabet. More interesting is that some of

these signs do not seem to be randomly placed in close proximity to a number of the represented horses (see Fig. 97.b). Those of the fourth group (see Fig. 95 and Figs.97: 15, 16, and 17), though they are unpatinated (see above), could be taken as an example. Close to each depicted animal, there is a sign that differs from the other two (Fig 97b: 11, 12, and 13). The first sign resembles the Latin characters "IT"; the second consists of the character "O", while the third takes the form "I". Such observation leads us to suggest that a number of the depicted horses could metaphorically present different identities/clans associated with the equestrian population. Unfortunately, none of the signs, which are engraved along with Ahel-Ebdemmed equids, can be comparable to the brands (*feux*) recorded by Paris (1953) (see Table 38 above). However, it is possible to compare a number of the signs recorded at Foum Chor with the animal brands studied by Paris (1953):

Sign/mark/brand	**Local name**	**Clan/tribe**
 (Table 38.67; and Fig. 53b.83)	?	Idabouk (Paris 1953:1627)
 (Table 38.76; and Fig. 28a.26)	?	El Hadj Ahmed Deidé (Paris 1953:1627)
 (Table 38: 59, 61, 120, and 122; Figs. 31a: 1 and 5; and Figs. 53b: 18 and 79)	*djadjé* or *djeija* (*tagaist* in Tamachek)	Ahel Sidi (61), Noaji (120), Torchane (122) (Paris 1953:1627-9)
 (Table 38.60; Fig. 31a.14; and Fig. 53b.62)	*djadjé* or *djeija* (*tagaist* in Tamachek)	Trarza, Tendgha (Brakna), Tanak and Dieidiba (Paris 1953:1625)

 (Table 38.70; and Fig. 31a.23)	*lgassem*	Larlal oulad Sidi and Koboitat (Paris 1953:1627)
 (Table 38.68; and Fig. 31a.24)	*lgassem*	Larlal oulad Sidi and Koboitat (Paris 1953:1627)
(Table 38: 116 and 133; and Fig. 53b.82)	*izdied*	Kel Antessar, Kel Sidi Ali and Immédédren (Paris 1953:1629)

(Table 39)

Signs of northern Atar that can be comparable to those studied by Paris (1953)

The distribution of these geometric motifs and their order on the engraved rocks of the two recorded sites do not give the indications that they are/were a part of Libyan and/or Tifinagh writing system (see sub-section *VI.2.2.2.2.4.3* above). To identify these geometric motifs or abstract signs as *Alāma*, *Nar* (Arabic), *Fire* (Hassanyya), *Wesms*, *Feux*, or Animal Brands: "Hot-iron markings on animals" (Gerteiny 1967: 221), they must be well-associated with the depicted animals. Indeed, with few exceptions, the majority of the geometric motifs of Foum Chor site occur in isolation: only one out of the four faces of the rock comprises animal depictions along with the abstract signs (see Figs. 15, 19, 26 and 49). The superpositioning of a number of these geometric motifs on the depicted cattle of the Western Face (Fig. 53.b and also Table 4) does not allow us to consider these signs as animal brands. The reason for that is that each of the concerned animals (mainly cattle) is superimposed by geometric motifs with different (rather than recurrent) characters. This, therefore, confines us to explain them as tribal/clan marks. At this point, we have to keep in mind that the *Alama* or animal brands themselves must be derived from tribal/clan marks since the main function of the former is distinguishing or marking the animals of these different social units. The arrangement of some of these tribal/clan marks (*e.g.* those of the Right Side of the Eastern Face at Foum Chor: Fig. 30) or their association with

specific animals (*i.e.* Ahel-Ebdemmed equids: Fig. 113) could mean that the Moors and proto-Moors who occupied the area were organised in confederations of tribes, factions of tribes (clans), subfactions, and families. This explanation could be possible (*i.e.* a confederation between different tribes/clans) if we take into consideration the information given in this section and section VI.2.2.2.2.2, this chapter).

Explaining these geometric motifs or abstract signs as tribal marks, each of them has its own character that signifies or differentiates one clan/tribe from the others, also implies that the same marks were probably used as a sort of 'territorial claim' and of 'animal branding' as well.

The lightly patinated cluster of tribal/clan marks placed on the Right Side of the Eastern Face of Foum Chor rock (Figs. 30) seems to be of particular interest. It could signify the Moorish tribes/clans which were organised in a confederation against the French who -under the command of Colonel Gouraud- conquered Adrar in December, 1908 and seized its capital Atar on January 9, 1909 (for the phases of '*colonne de l'Adrar*', see Gerteiny 1967: 111-12, and also El Hady n.d. 177-90). On the other hand, one can imagine this cluster of marks as a dialogue or symbolic language of communication between the Moorish tribes/clans which occupied this area and governed it by traditional relationships.

Depending on Gerteiny's work (1967: Appenix I and II), we finally mention here the presumed origins of a number of the tribes/clans mentioned in Tables 36 and 37 above and their areas of hegemony (see also Map 2):

• Moorish tribes of monastic traditions (Zāwaya):

Tribes or Confederation	*Area of Hegemony*	*Presumed Origin*
Ahel Barikallah	Akjoujt	Berber
Idaw Ali	Mederdra, Chinguetti, and Tidjikja	Berber
Kunta	from Timbuktu to Adrar	Berber
Laghlal	Hodh	Berber
Rigaibāt Charg or le-Gwassem	Zemmour, Adrar, Morocco, and Rio de Oro	Berber
Smacides	Atar	Berber

• Moorish tribes of martial tradition (Hassān):

Tribes or Confederation	*Area of Hegemony*	*Presumed Origin*
Kunta	from Timbuktu to Adrar	Berber
Oulad Ghaylan	Adrar	Arab
Rigaibāt Sahel	Zemmour, Adrar, Morocco, and Rio de Oro	Berber

In sum, the similarities in some characters of the recorded abstract signs, of the animal brands used by the contemporary Moorish clans/tribes, and of the Libyan and Tifinagh alphabets, lead to the conclusion that northern Atar engravings visibly reflect a cultural/ethnic continuity from the past to the present. These successive engravings recorded in this part of the Maureitanian Sahara (see also Chapters 4 and 5), therefore, can be seen as a product of waves of populations that belong to the same origin: Berber.

VII. Conclusion:

In this chapter, I have tried to use rock art to study the cultural history of Atar region, Mauritanian Adrar during the Late Holocene.

From the intensive discussions made in this chapter, we conclude that this art is quite different from that of sub-Saharan Africa. There is also no indication that it is directly linked with the Algerian corpus. The engravings of Foum Chor and Ahel-Ebdemmed are most probably linked with the rock art of the northwestern part of the Sahara: the southern Morocco and The south-western provinces (formerly the Spanish Sahara). The rock art of northern Atar, therefore, is of northern affinities and constitutes a part of the known Berber rock art, and consequently proto-Berber speakers would have been present in the northern Atar during the Late Holocene (*cf.* 4000 BC onwards).

These engravings relate to cultural and historical events that took place in this region and surrounding areas in the Mauritanian Adrar roughly from the appearance of cattle domestication until the present. At the same time, it should be understood that rock art elsewhere in Mauritania may well have extended back further in time to the pre-domestication phase which is presented by Wild Ethiopian Fauna or game animals and hunting activities.

The presence of abstract signs and/or geometric motifs among the represented motifs of northern Atar is of vital importance in establishing such a link: we know similar motifs from other sites of the Sahara (*e.g.* the Tassili in Algeria, south Morocco and the Western Sahara). At Foum Chor and Ahel-Ebdemmed, some of these abstract signs and/or geometric motifs are associated with the engraved cattle and have the patina of natural rock. After a careful analysis, we felt inclined to interpret a number of these motifs as signs which resemble some letters/characters of the Libyco-Berber writing and/or Tifinagh inscriptions. Though we continue considering a number of them as signs that mark local clans/tribes, the meaning of other is still unknown if not obscure to us, and their function is not clear either.

The study of the cultural history of the western part of the Sahara via rock art images is not an easy task. This is simply because "The east/west and north/south migrations of the African peoples have confused the ethnic, racial and linguistic map of the [African] continent" (Diagne 1981: 246). Multiple ethnicities, which are evidenced not only by archaeological materials but also by the recovered physical remains (*i.e.* Mechtoid, Classic Mechtoid, Negroid, mixed types, etc) make for such a confused cultural landscape. In this regard, Camps (1982: 558-9) describes what is called the *Mauritanian Neolithic* cultures by stating: "[This is] the *Mauritanian Neolithic* in which are combined traits of varying origins (Mediterranean-Atlantic, Saharan-Sudanese and, perhaps, Guinean as well as some Neolithic of Capsian Tradition)".

Although rock art images sometimes offer valuable information about past cultures and ethnic groups, the data obtained from the analysis of rock art images, in many cases, seem to be faltering and uncertain. Using rock art as a clue for cultural history and past ethnic groups, therefore, must be supported by a variety of evidence that may aid us to detect the bias which may result from the use of the traditional criteria of rock art classification (*i.e.* the style, technique, thematic content, and patina). For example, rock art shares certain universal techniques which sometimes lead to seeming convergences without any real contact. This fact -in addition to the problems previously mentioned (see section III and sub-sections *IV.4*, this chapter) - makes even a relative chronology or "ethnic divisions" of a rock art corpus in a given area uncertain. Consequently, re-directing our efforts beyond broader culture-history provides data on more localised cases of cultural dynamics and identity.

Nonetheless, rock art can be used to detect social boundaries of ancient ethnicities or past ethnic groups. As the case study showed, rock art images of the northern Atar, as a remaining aspect of material culture, coincide with social boundaries of the Berber and/or proto-Berber population. Representational art as well as abstract signs and/or geometrical motifs can be seen as a 'language' employed in self-identification.

As to the culture historical context of the rock engravings of northern Atar, it could be possible to place the cattle depictions of Foum Chor (along with the signs that have the same dark patina) between the period 4000-2000 BC. Other engraved animals of the site, which are schematically depicted and show different levels of patina (medium to light), can be dated to later times (proto-historic and historic). As to the equids and other motifs of Ahel-Ebdemmed, they can be dated not before the early first millennium AD, the earliest time of introducing the horse to West Africa.

Finally, it seems unrealistic to look at the culture historical approaches as out-moded paradigms. Though such approaches, like many, implicate serious problems (see sub-section II.2, this chapter), they still contribute to understanding man's culture and enable us to detect changes in behaviour patterns. This "old-fashioned" means to study northern Atar engravings led us to conclude that proto/palaeo-Berbers were existed in the Mauritanian Sahara during the Late Holocene. This, indeed, is of considerable interest especially where there is very little evidence obtained from other evidence. These engravings then, above all, provide an additional source to study the culture history of the Berber population: This art provides evidence for the existence of domestication and practising nomadic pastoralism. The absence of wild animals that can be dated to the same period indicates that cattle herding was the main economic activity of the ancient population of northern Atar. Game animals, which are executed in a different (schematic) style and have different level of patina, can be taken as indicator of change in behaviour pattern which was, and is always, controlled by change in climatic conditions as shown in the previous chapter.

The important fact that can be taken as definite from employing a culture-historical paradigm in this chapter is the continuation of the Berber population from prehistoric to historic times in the Atar region.

Chapter Seven
Conclusions and prospects

I. Introduction:

This chapter describes the contributions made by "A New Recording of Mauritanian Rock Art" and summarises the main findings of the work (the implications of the Atar rock art: its dates and its cultural associations). It also defines the interpretative approaches taken verses more "shamanistic" ones. This chapter, finally, discusses the future direction that I believe rock art studies in northern Mauritania (Berber rock art studies) needs to pursue.

II. The contribution of the work:

This study identified two previously undocumented rock art sites in the Mauritanian Sahara. Its principal aims were to locate new rock art sites (engravings) in a relatively unknown portion of the Mauritanian Adrar and carry out a systematic recording of these engravings with respect to a number of new aspects that seem to be ignored or omitted in most previous work on the subject. This new recording and the detailed description of the collected motifs provided important pointers towards understanding the rock art of this region both ecologically and culturally.

The first chapter of this thesis attempted to draw together the information obtained from the relatively little work done on the Mauritanian rock art. The limited knowledge obtained from the analysis of rock art motifs of this enormous corpus is partly due, as shown in the second chapter, to the lack of systematic recording. Since the recorded subjects of the present work include zoomorphic motifs, it was essential - for the purposes of the detailed description- to devote the third chapter to discussing the pointers required for identifying the variety of animal species that could be presented and investigating the related problems that may encounter the researcher when considering such motifs for categorisation and ultimate interpretative analysis. Undeniably, it seems difficult in some cases to identify animal representations without

prior knowledge of zoological observation. The detailed description given in the fourth chapter, then, aimed to set up the recorded engravings for an intensive interpretative analysis -in the other two remaining chapters- on the basis of two different explanatory frameworks: the palaeoenvironmental and culture-historical.

In sum, the current work, which intensively discusses the systematically recorded engravings within a multi-disciplinary model, set out to gain better understanding of the Mauritanian rock art both environmentally and culture-historically. Besides what one may find in the text of this work, I summarise here the main findings of the study:

1- No substantial study, other than the early reports, and written articles in addition to the few superficial studies, has been made of the Mauritanian rock art. In view of that, very little has been done regarding the interpretative analysis of this poorly recorded corpus. In addition to the systematic recording, this study provides an in-depth environmental and culture-historical analysis of northern Atar engravings as a core 'case study' of the Mauritanian rock art. It emphasises the importance of the systematic documentation and using the new techniques and methods of recording in interpreting and understanding rock art subjects. This systematic recording allows not simply a 'fine copy' – but an in-depth interpretative analysis of the rock art motifs under consideration.

2- The clear strength of the study, contrary to what has been stated in previous work (*cf.* Monod 1938; Vernet 1993; and also Hugot 1970: 111), is that northern Atar engravings (as an example of the Mauritanian rock art) brings into light new elements to the study of this northwestern Saharan corpus. This study, whatever its flaws and limitations might be (see below), shows how a previously unrecorded couple of engraved rocks in a relatively unknown portion of the Adrar plateau provide new clues for a better understanding of the history and prehistory of the Mauritanian Sahara, in particular, and the broad Saharan zone, in general. It was certainly possible -on the evidence of this study- to envisage much more about the environmental conditions and the peopling of northern Atar region during the Late Holocene than has been known previously.

3- It was essential in our study of palaeoenvironment and cultural associations to compare the recorded engravings with other evidence. Indeed, the impact of using other evidence in studying rock art images has certainly been substantial, allowing the researcher to extend his investigation on (and beyond) the depicted subjects. The multi-disciplinary model employed in the last to chapter seems to put rock art studies in northern Atar and neighbouring area on the right track. In addition to the valuable information provided by such a model, it was also functional to detect the bias in the depicted subjects (*e.g.* the bias in the level of patina).

What it found in this study, therefore, was that by employing the new methods and techniques of recording rock art, those of previous work are insufficient for a real insight into the Mauritanian corpus. The systematic recording, the detailed description, and the in-depth interpretive analysis of northern Atar motifs proves – contrary to what has been previously and frequently assumed- that Mauritanian rock art, similar to other Saharan corpora, can add to our knowledge on the history and prehistory of the Sahara.

The study, however, suffers from a number of limitations which can be represented as following:

1- This study is based on an archaeological survey centred on a single season of fieldwork. Regrettably, it was not possible to have more seasons in the field. This is partly due to the costliness of conducting fieldwork especially in this part of the Sahara.

2- As mentioned before, it was desired from the beginning to locate and record 'new' rock art sites in a relatively unknown portion of the Mauritanian Adrar. Practically speaking, locating 'new' rock art sites and a systematic recording of all represented motifs are difficult tasks. Focusing on a single or a couple of sites may possibly mean that a number of rock art subjects, styles, or techniques might be not represented (in our case, the Large Wild 'Ethiopian' Fauna, the human figures, and paintings, for example, which are not

presented). This consequently means that many issues will not be discussed or will not be investigated as thoroughly as they might have been. Apart from the fact that this work deals with such issues in one way or another (see, for instance, Chapter 1), I believe it is better to carry out a systematic recording of a single site rather than making a 'hasty' recording or 'brief' documentation of a larger number of rock art sites in a single season. Indeed, the two sites studied in this work may represent by far the most comprehensively recorded rock art sites in the Mauritanian Sahara.

3- The two paradigms employed in interpreting the recorded rock art were responsible for directing the research to certain issues (*i.e.* the environmental biotopes/biomass and the culture historical associations). The research strategy, therefore, did not include investigation of further issues (*e.g.* the socio-ideological or magico-religious ones). The recorded data, then, may not have been fully interpreted and, consequently, awaits further investigation either by the present writer or by other researchers in the field. The two approaches employed in this work, however, enabled an adequate explanation and analysis of rock art for a single thesis. As evidenced by this work, these approaches investigate one of the most interesting topics in the field of Saharan prehistory: the validity of rock art images as a tool of reconstructing palaeoenvironment and culture-history.

III. The implications of northern Atar rock art:

The two rock art sites of northern Atar in the Adrar region (in the north-central part of Mauritania) comprise a relatively wide range of engravings that cover a considerable period of time. In addition to the environmental and ecological significance of these images, they can also be taken as indicators of the successive phases of human occupation and cultural associations in the area during the Late Holocene.

The temporal context of these engravings shows that they span several thousand years of human occupation and cultural developments in the Atar region. They cover the period which extends from 4000/2000 BC to recent or present times. The engravings of northern Atar cover, in terms of the chronological schemes of Saharan rock art,

three periods or phases: Cattle or 'Bovidian', Horse or 'Caballian', and Camel or 'Camellian'. More recent periods are also identified: there are inscriptions, though few, in a variety of scripts, including Arabic and Latin (European), which date to a very recent date of our era.

The variety of zoomorphic motifs provides evidence for the changing Holocene environment in this part of the Sahara. In conjunction with other evidence (*e.g.* palaeoclimatic, archaeological, historical), these motifs can be taken as indicators of the changing relation between humans and their environment. Furthermore, this representational or 'animal' art indicates that human (economic) activities were affected by the climatic conditions that took place during the Late Holocene. The non-representational art (abstract signs and/or geometric motifs) can be seen as a visual symbolism, a form of cultural communication, and a medium for expression of social and cultural identity. The engravings of Atar region, therefore, echo both the physical and cultural/conceptual landscapes.

The variations between the rock art of northern Atar (Mauritania) and that of the sub-Saharan Africa (southern Mali) led me to reasonably link the former corpus with the rock art of the north (Morocco south of the Atlas and southern provinces or the Western Sahara) and to a lesser degree with the rock art from the east (Algerian Sahara). This would seem to indicate that there was a lack of contact between the population of Atar region and the human groups who occupied sub-Saharan Mali during the Late Holocene. The similarities in both representational and geometric motifs of the rock art of northern Atar (Mauritania), of Morocco south of the Atlas, and of the southern provinces (the Western Sahara) led to the conclusion that there was a 'stylistic' conformity and/or sufficient contact to allow a Berber cultural continuum to be regarded in this area. Moreover, the similarities between the geometric motifs of northern Atar which proved to signify the Moorish (Arabo-Berber) clans/tribes that occupied the area, the animal brands used by the contemporary Moors, and the Libyan and Tifinagh alphabets found at rock sites elsewhere in the Mauritanian Sahara including the Adrar plateau; all these aspects reflect a cultural/ethnic continuity. These successive engravings, therefore, can be seen as a product of waves of populations that belong to the same origin: the Berber.

IV. Environmental and culture-historical vs. shamanistic approaches:

The engravings of northern Atar are identified in the light of style, technique, superimposition, patination and thematic content. The contexts and the phases of these engravings are integrated in this work within two interpretive frameworks: the environmental and the culture-historical. However, a significant development in some aspects of rock art research in recent years has been to consider the influence of religious and ritual factors as contributions to the artistic themes. Most famously, this has characterised the work done on Southern African rock art by Lewis-Williams and others (*cf.* Lewis-Williams 1997, 1998; Lewis-Williams & Dowson 1988, 1990). Using analogies from both myth and contemporary ethnography, it has been suggested that a significant number of panels in southern Africa can be said to embody shamanic themes (for some examples, see, for instance, Parry 2000). Thus, paintings feature humans bleeding from the nose, half-human/half-animal (therianthropic) forms and animals which are regarded as having considerable magico-religious significance, such as the eland. The dominant hypothesis in southern African rock art now sees the majority of rock art as embodying themes and experiences of shamans entering trance and targeting malevolent beings in the spirit world. Encouraged by their ability to interpret the rock art of southern Africa, Lewis-Williams and others have subsequently sought to expand the consideration of shamanic experience into other areas, most notably into the cave art of Upper Palaeolithic Europe. These attempts at reinterpretation have generated a mixed response.

Whilst this shamanic approach certainly offers intriguing new possibilities, it was not applied to the Mauritanian rock. For a start, there is not yet been a clear association made between shamanic experience and the rock art of the Sahara. The characteristic features of trance experience amongst represented motifs in the Sahara is rare to non-existent (i.e. there are few, if any, representations of true therianthropes [most are masked men], no focus on bleeding noses, and few entoptic dot patterns). Indeed, while there may be some panels in the Sahara with other potential trance themes (such as elongations of figures or dotted line images), there are ceretianly no such motifs in the panels I examined. It was therefore felt that such an approach does not merit application to the engravings of northern Atar.

V. Future directions for rock art studies in northern Mauritania:

As previously mentioned, Mauritanian rock art has received little attention compared to other rock art corpora of the Sahara. Moreover, the Mauritanian rock art is severely deteriorating through either natural forces or the hands of vandals. This situation, therefore, may put us in the position to state that it is our duty to contribute to the study and the protection of this priceless wealth of engravings and paintings.

For me, it seems pointless to speak in this place of the duties of principal authorities (*e.g.* governments, antiquities services museums, *etc.*) and the role that they could play to protect these painted and engraved rocks from acts of deterioration and/or vandalism. The reason for that is connected -in more parts of the world than Mauritania- with an interminable problem: the financial one, of course. For the present, perhaps the best protection for rock art sites for posterity is their accurate recording as soon as possible.

The encouragement of both foreign and local research may constitute the first and most important step to protect rock art heritage from destruction. As a secondary solution, if we (the researchers: the tracers) are able to both accurately record and gauge the state of preservation of the rock art sites under research, then, we actually may contribute to the protection of this wealth against the aggression of natural forces. Additionally, when we are at work, sometimes we have the opportunity to make some contact with the local inhabitants who live around or nearby the rock art sites under investigation. This face-to-face relationship should be employed not only in collecting information regarding the recorded motifs but also in spreading basic knowledge on the importance of rock art image as an aspect of cultural heritage. When the local inhabitants deal with the researchers while they are at work, when they will be able to appreciate the efforts done by the researchers (locals or foreigners) during recording this heritage (esp. during the most difficult step: the tracing process: see, as an example, Figs. 144, 145 and 146), they will be able to recall the importance of these painting and engravings. They could ask the researchers, and above all themselves, many questions that inevitably lead to re-shaping or renewal of their self-conscious towards their cultural heritage and its precious value. Discussing, or even speaking about any future direction for rock art

studies in specific region, therefore, remains deficient if we ignore or omit this factor of local interface.

In addition to what has been said, I recall here my conversation with Paola Farina (a trainer) of Coop. Archeologica Le Orme dell'Uomo that took place in Valcamonica, Italy, following the archaeological fieldwork/training in Paspardo in August 2000. During that period, Farina -whose main interest is the petroglyphs of Valcamonica with special reference to the "Camunnian Rose" (Farina 1997)- was conducting her last archaeological field-season with the team of Footsteps of Man. Discussing future plans, she raised the possibility of teaching (the Camunnian) rock art to children in Italian schools. This is but one important way to proliferate knowledge of rock art. In their paper presented for RA Congress 1997, Seglie & Seglie (1997) wrote:

> Rock art in history occupies a position of varying importance in scholastic programmes around the world. In order further to propagate knowledge of rock art in a pedagogical environment the collecting of the most important teaching experiences employed or projected by scientific, museum and scholastic institutions and by didactical and teacher training centres is to be considered vital. From this paper and from the discussion during the Conference we can identify and initiate new directions of scholastic thinking which will guarantee a better knowledge and understanding of rock art archaeology. From the first years of or children's education, we must develop a civic conscience in their minds, aimed at the conservation and promotion of the merits of mankind's rock art heritage
>
> (Seglie & Seglie 1997)

As to the future directions for rock art studies in northern Mauritania, we should note that:

1- Many rock art sites in the Mauritanian Adrar, in general, and in the northern Atar, in particular, are awaiting discovery.
2- Most of the known Mauritanian rock art corpus has never been systematically recorded (beyond mere sketches or photographs).
3- Most of the conducted work on the subject seems to be done for limited or specific purposes: to establish either chronological or stylistic sequences.

This state of research has kept the Mauritanian rock art long decades away from any sort of systematic recording and thorough explanation that give more depth towards an appreciation of a corpus.

As we saw, the recording conducted in this work allowed us to get a better understanding of both environmental and the culture-historical implications of northern Atar engravings (as a case study). *A New Recording of Mauritanian Rock Art*, in other words, allowed much fuller information as to understanding the history and prehistory of this part of the Sahara. Apart from the present work, since no in-depth study has yet been made of the Mauritanian rock art, what we need, therefore, is a new wave of a systematic recording for other sites which can be discovered and investigated in northern Atar region and other previously documented rock art sites in Adrar plateau, in particular, and other sites in the Mauritanian Sahara, in general. Lastly, but not least, there is no need to remind anyone that,

> The rock art of the Sahara [including Mauritania] is [...] a veritable library in which one can unearth a considerable number of clues as to technology, way of life and even the evolution of the population.
>
> (Camps 1982: 281)

This study is an essential first attempt to revitalize one of the least known rock art corpora in the Sahara. Hopefully it will contribute to understanding of this much-neglected area of Saharan rock and evoke the minds of the forgotten peoples of one of Africa's largest countries (the Islamic Republic of Mauritania occupies 400,000 square miles) and catapult this rock art corpus onto the stage of Saharan rock art studies and the greater international stage.

Inventories, Maps, and Figures

Inventories

CATALOGUE DES SITES RUPESTRES DE MAURITANIE ET DES ZONES LIMITROPHES

A. INVENTAIRE DE R. MAUNY : "Gravures, peintures et inscriptions rupestres de l'ouest africain" - IFAN, 1954

PB : pasteurs à bovidés
CH : cavaliers
LB : libyco-berbères
M : moderne

G : gravures
P : peintures

1	ABOULAYE	Tagant	CH, LB	G	géométriques	doc IFAN, XV.3
2	AGNEITIR/DALILA	"	LB, M	P		Senones - Puigaudeau, 1939, p. 49
3	AGNEITIR SBA	"	CH, LB, M	P	girafe (M)	P. 46-49 " "
4	AGAPAKTEH	Erg Chech	PB, CH	G	autruche, cavalier ou antilope (?) ancien	Monod, 1938, p. 9
5	AIOUN EL ATROUSS	Hodh	LB	G	tifinagh	" " p. 10
6	AHAZHAZ	Adrar	CH, LB	P	bovidés, girafes, hommes, 2 chars, tifinagh	Monod-Mauny, 1949, p. 112-114
7	AHDER	"	CH, LB, M	G	éléphant, girafe, bovidés, guerriers, chameaux	" " " "
8	AHOJJAR	"	CH (?), M	P.G	éléphant (?), bovidés, girafe, hommes	Mauny, 1954, p. 51
9	AMZEILI	N. Adrar	PB, CH, LB	G	éléphants, bovidés (CP, CH)	Monod, 1938, p. 14
10	AOUCHICHE	"	PB, CH	G	bovidés, éléphants	Monod, 1938, p. 14
11	AÏouneght	Zemmour	PB, CH	G	éléphant, girafe (CH) 105 chars bovidés, antilopes, autruches, hommes, boeufs sellés crocodiles (?)	Monod-Cauneillé, 1951, p. 181-197
12	AIOUNET/ELJI	dhar O.	PB, CH, LB	G	chevaux, chameaux, chasses à l'autruche, onyx, 1 carnivore, tifinagh	Monod, 1938, p. 14, 18-19

13	ATOUIGT SBA	Tagant	CH, PB, M	P	bergers et bovidés anciens (?), chameaux, chasses à l'autruche,	Monod, 1938, p. 17
14	ASSABET AMATAIE	ME dhar T.	PB ? CH, LB	G	cavaliers bovidés, chameaux, tifinagh	Monod, 1938, p. 17
15	BEN AMERA	Tijirit	LB, M	P	chevaux montés, géométriques, tifinagh	Monod, 1938, p. 20
16	BIR IGUEH	"	PB, CH, LB	G.P	girafe (PB), bovidés, antilopes, autruches, hommes, 2 chars, tifinagh	doc IFAN, XV.3
17	BIR LEHOUISSAT	Zemmour	PB ?, CH ?	G	homme, mammifères	Monod, 1938, p. 20
18	BOU NESSAA	Assaba	LB, M	G.P	peut-être 1 cavalier LB	Monod, 1938, p. 20-21
19	BOU SIROUIL	Tagant	LB, M	P		Senones-Puigaudeau, 1939 p. 65
20	CHATOU ES SEHIN	Adrar	?	P ?	girafe (?)	Mauny, 1954, p. 55
21	CHEBBI	dhar O.	LB ?, M ?	G ?	"les mêmes éléments qu'à Aïounet Enji ou Kedam" Monod	Monod, 1938, p. 21
22	CHEGGA	Hank	PB, CH ?, LB?	G	éléphant (PB), pieds	Monod, 1938, p. 21-25 et 89 Puigaudeau-Senones, 1939, p. 437 Bessac, 1953, p. 190
23	CHAB EN NAKHEL	Hank	PB à M	G	antilopes, autruche, bovidé, cavalier et canidé LB	Monod, 1938, p. 25
24	DOMOUCH	Afollé	LB	G		doc IFAN, XV.3
25	EL BEIYED	Adrar	PB, CH, LB	G	2 éléphants, girafe (CH, LB), bovidés,	Monod, 1938, p. 26-36 et 38
26	EL GLATT	dhar O.	PB, CH, LB	G	autruches, hommes, chars cavaliers, chameaux "LB typique"	Monod, 1938, p. 38-40
27	EL GLEITAT	Adrar	CH ?, LB ?	P	hommes, bovidés, cavaliers, antilopes	Monod, 1938, p. 38 et 41
28	EL KSEIB	Hank	PB	G	2 éléphants, bovidés, antilopes, hippopotame	Puigaudeau-Senones, 1939, p. 443
29	EL MOUELLA	Adrar	PB, CH, LB	P	mammifères, antilopes, cavalier (?)	Monod, 1938, p. 42

Inventory 1

The recorded rock art sites of Mauritania (continue)

Inventory 1

30	EL MOINAME	Tagant	PB, CH	G	girafe	Monod, 1938, p. 42
31	EL MREITI	Hank	LB	P	bovidés, chevaux, cavaliers, géométriques, tifinagh	" " "
32	EL NZEROB	Hank	PB	G	éléphant	Carte Perret, JSA, 1937
33	EL RHALLAOUIYA	Adrar	PB, CH, LB	G	3 éléphants, rhinocéros, bovidés, antilopes, cavaliers, chars, "LB typique", tifinagh	Monod, 1938, p. 70 ; Vernet, 1982
34	GARAOUAL	Tagant	LB ?, H ?	G.P		Monod, 1938, p. 42
35	GLEIB KELB EL AKHLE	Akjoujt	?	P	animaux, 1 homme	Monod, 1938, p. 51
36	GLEIVAT KLAB LAKHLE	dhar O.	PB, CH, LB	G	bovidés (anciens, animaux tifinagh	Monod-Mauny, 1949, p. 1
37	GUEIB AOUTITELT	Akchar	PB, CH, LB	G.P	girafe (PB, CH), bovidés, canidé, rhinocéros (?), géométriques	Monod, 1938, p. 42
38	GUEIB du Lundi de Pâques	Bir Moghrein	PB	P		Mauny, 1954, p. 60
39	GUEIB EL BACHA	dhar T.	PB	G	antilope, mammifère	Monod, 1938, p. 44
40	GUEIB HARSAR	"	LB, H	G	dont tifinagh	Senones-Puigaudeau, 1939, p. 70
41	GUEIB MOGHREIN	Bir Moghrein	PB (?)	P		Mauny, 1954, p. 60
42	GUEIB NICOLAS	"	PB (?)	P		IFAN, doc XV.2 et 3
43	GUEIB RAOUI	Akjoujt	PB, CH, LB	G	hommes, bovidés, antilopes	IFAN, doc XV.3
44	GUEIB TAGOURARET	dhar O.	LB, H		dont tifinagh	IFAN, doc XV.3
45	GUEIB TIDERE	Bir Moghrein	PB (?)	G		Mauny, 1954, p. 60
46	GUEIB EL ABD	dhar O.	LB, H	G	dont tifinagh	Monod, 1938, p. 44
47	GUENGOUR	Bir Moghrein	PB (?)	P		IFAN, doc XV.3
48	GUENDEL	Assaba	H (?)	P		Monod, 1938, p. 44
49	GUETA HAAHA	dhar T.	LB, H	G	"LB typique"	Senones-Puigaudeau, 1939, p. 69
50	HAMDOUN	[illegible]	PB, LB, H	P	bovidés, hommes	Mauny, HA, [illegible], p. 70-72
51	IDARSEN (gleib)	dhar T.	LB, H	G	"LB typique" dont canidés	Monod, 1938, p. 44-45
52	ILLJ	Adrar	LB (?), H	G	animal, tifinagh (?)	" " "
53	IMDEL EL ABIOD	dhar O.	CH, H	G	addax, cornidé, chèvre (?) cavalier (?), chameliер (?)	" " "
54	JBEILAT	N. Adrar	PB (?), CH ?	G	antilopes, bovidés	Monod, 1938, p. 48
55	KEDAHA	dhar O.	PB à H	G	"LB typique", bovidés anciens 2 chars, tifinagh	Monod, 1938, p. 51-53

56	KHADRA	dhar O.	CH, LB	G	2 chars, "LB typique",	Mauny-Monod, 1949
					tifinagh	p. 112-114
57	KHIFFISSAT	Tijirit	CH	G	hommes, chevaux, girafe,	IFAN, doc XV.3 et 4
58	LEKHEITAT EL ALIBA	dhar T.	LB, H	G	cornidés, animaux	Sprutte-Cuas, 1957
					"LB typique", phacochère,	Monod, 1958, p. 51-53-55
59	LEMGADER	Adrar	PB, LB	G	tifinagh	
					éléphant (CH, LB ?), girafe,	Monod, 1958, p. 53-57-59
60	LEMEIB	dhar T.		G	bovidés, homme, antilope	Mauny, 1954, p. 64
61	MAGUROUGA	dhar T.	CH, LB, H	G	éléphant (LB), "LB typique",	Monod, 1958, p. 57-et 60-62
					tifinagh	
62	MDEMAH	Hank				Monod, 1958, p. 60
63	MEJROUDA ABAOUACH	Erg Chech	LB, H	P	dont tifinagh	IFAN, doc XV.3
64	MEKEDOUAR	Tagant	?, LB	G	bovidés, autruches, girafes,LB;	" "
65	MJEBIR	Erg Chech	PB	G	cornidés,grossiers (bovidés ?);	Monod, 1958, p. 60 et
66	NEILANE	Adrar	PB, CH, LB	G	girafe, antilope, bovidés (PB)	Monod, 1958, p. 62-64,
					chameliers, cavaliers, hommes (LB)	
67	NIEMILAIME	Adrar	LB, H	P	"LB typique", tifinagh	Monod, 1958, p. 62-63 et 67
68	N'TEGUACH	Tagant	CH (?), LB ?;	P		Mauny, 1954, p. 65
69	OUADANE	Adrar	LB, H		peut-être LB	Monod, 1958, p. 63 et 68 - Semonne-Pui gaudeau
						1939, p. 69
70	OUED IFENOUAR	Adrar	PB	G.P		Mauny, 1954, p. 66
71	OUM EL ADUTIGAT	Tagant	LB (?), H	P	girafe (LB ?), canidé	Monod, 1958, p. 68-70
72	OUSSAT CHEGGAG	Zemmour	PB, CH	P	éléphant, girafe (PB), hommes,	Monod, 1951, p. 198-213
					bovidés, antilopes, autruche,	
					cheval avec cavalier et arc...;	
73	OUSSAT GAHATA	dhar T.	PB, CH	G	bovidés	Monod, 1958, p. 70
74	OUSSAT EL LHAH	Zemmour	PB, CH	P	girafe (in); Idem Oussat	Monod, 1951, p. 198-
					Chegga sauf éléphant	213
75	SANI	Adrar	PB, LB, H	G	girafe (?), antilopes, bovidés;	Monod, 1958, p. 70-71
					(?), cavaliers	
76	SEIL	Adrar	PB, LB	G	voir EL Lhalleuyia	Monod, 1958, p. 70-71
77	SFAILET YALI	Tijirit	CH, LB	G	2 chevaux, 1 girafe	IFAN, doc XV.3 et 4
						Sprutte-Cuas, 1957, n° 27

Inventory 1

The recorded rock art sites of Mauritania (continue)

78	TAGHDEGENT	Adrar	LB ?; N ?	G	girafe, bovidés	Mauny, 1954, p. 68
79	TAKOUST	Azefal	PB	G		IFAN, doc XV.3
80	TAOKEST	dhar T.	PB, CH	G	bovidé, girafe, autruches	Monod, 1938, p. 71-72)
81	TAOUJAFET	Tagant	CH, LB, N	P	éléphant (CH, LB ?), bovidé,	Monod, 1938, p. 71-72)
					homme, "LB typique", tifinagh	
82	TARF EL GUETTARA	dhar O.	LB, N	G		Mauny, 1954, p. 70
83	TARF TAOUDARET	"	LB, N	G	+ tifinagh	" "
84	TEGDAOUST	Ukiz	CH, PB, N	P	combat chameliers,-cavalier,	Mauny, 1954, p. 70
					2 girafes, 3 chars, quadrupèdes,	
					chasse à l'autruche, hommes,	
					géométriques	
85	TENEGUE	dhar T.	LB, N	G	"LB typique", tifinagh	Monod, 1938, p. 74-76)
86	TICHITT	"	LB, N	G.P	"LB typique", nombreuses stations "	" "
87	TICHIT	Zemmour	PB	G	éléphant, girafe, rhinocéros	IFAN, doc XV.3
88	TIGUIGUIL	dhar O.	?	G ?		Monod, 1938, p. 77
89	TIJET (Gleib)	dhar T.	LB ?, N ?	G		Monod, 1937, p. 248
						Monod, 1938, p. 77
90	TILILIT (Richat)	Adrar	LB ?	G		Mauny, 1954, p. 72
91	TIN BOUMAN	Zemmour	PB	P		IFAN, doc XV.2 et 3
92	TINGUER	dhar O.	PB, CH, LB	G.P	bovidé, homme...+ tifinagh	Mauny, NA, n° 44,
						1949, p. 108
93	TINLAERE	Adrar	LB, N	G	"LB typique", guerriers à	Monod, 1938, p. 77-78)
					javelots et boucliers ronds,	
					tifinagh	
94	TINTOULIN	Erg Chech	LB ?, N	G	chameau (LB)	Monod, 1938, p. 81
95	TOUJOUNINE					
	EL HERIR	Adrar	PB	G	2 herbivores anciens	Monod, 1938, p. 82
96	TOUNGAL	"	LB ?; N ?	P		Mauny, 1954, p. 74
97	TOUYERMA	"	LB ?	G	animaux cupules	Monod, 1938, p. 82et88
98	TWENTIT	"	PB, LB, N	G	girafes, bovidés (PB), antilopes "	" p. 88
					autruches,	
99	ZEUA	dhar T.	LB, N		"LB typique"	" " "
100	ZIG	dhar T.	LB, N	G.P	"LB typique", tifinagh	Monod, 1938, p. 89
101	ZIRI	Adrar	LB	G		" " "

Inventory 1

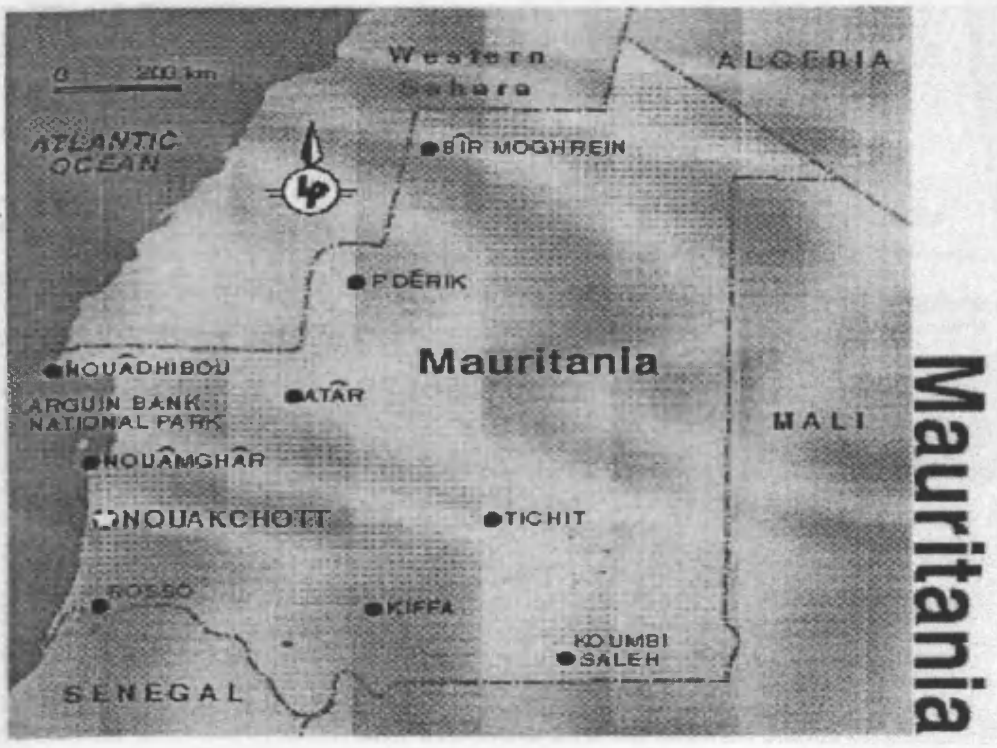
The recorded rock art sites of Mauritania

Maps

Map 1.a

Mauritania

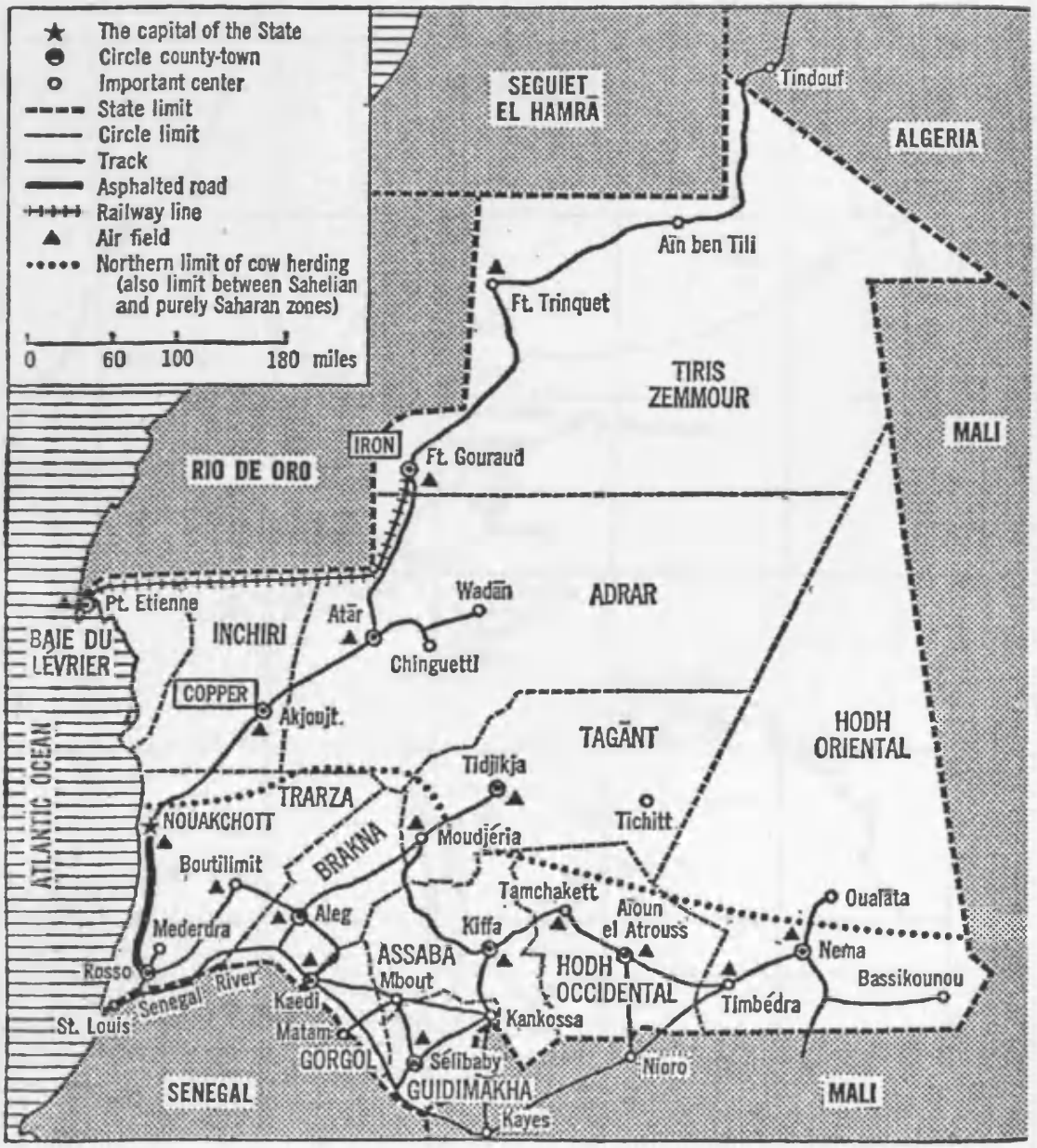
(maps.com 1999)



Map 1.b

Mauritania including Atar

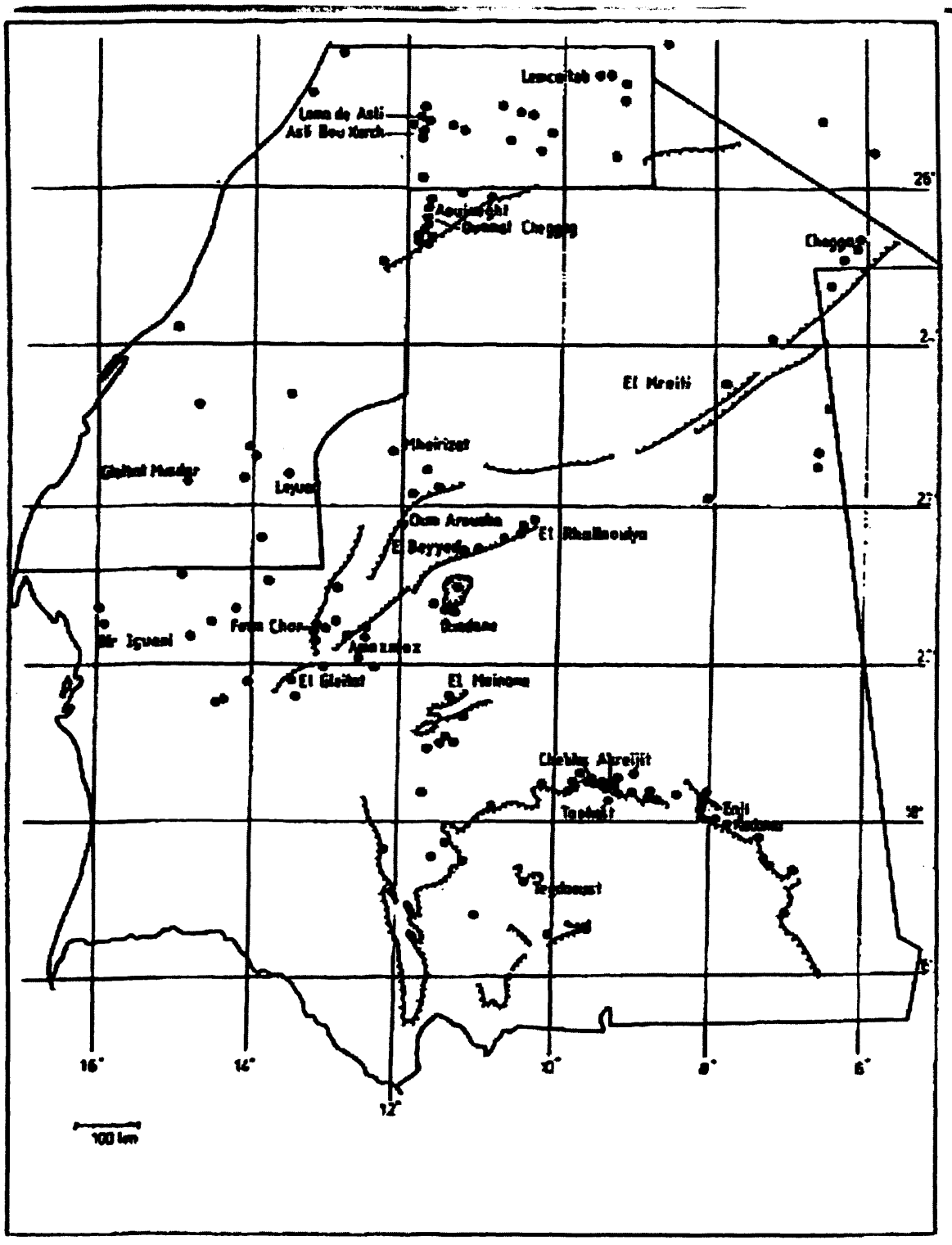
(TicketPlanet.com 2000)



Map 2

Mauritania including Atar within its circle limit (Adrar)

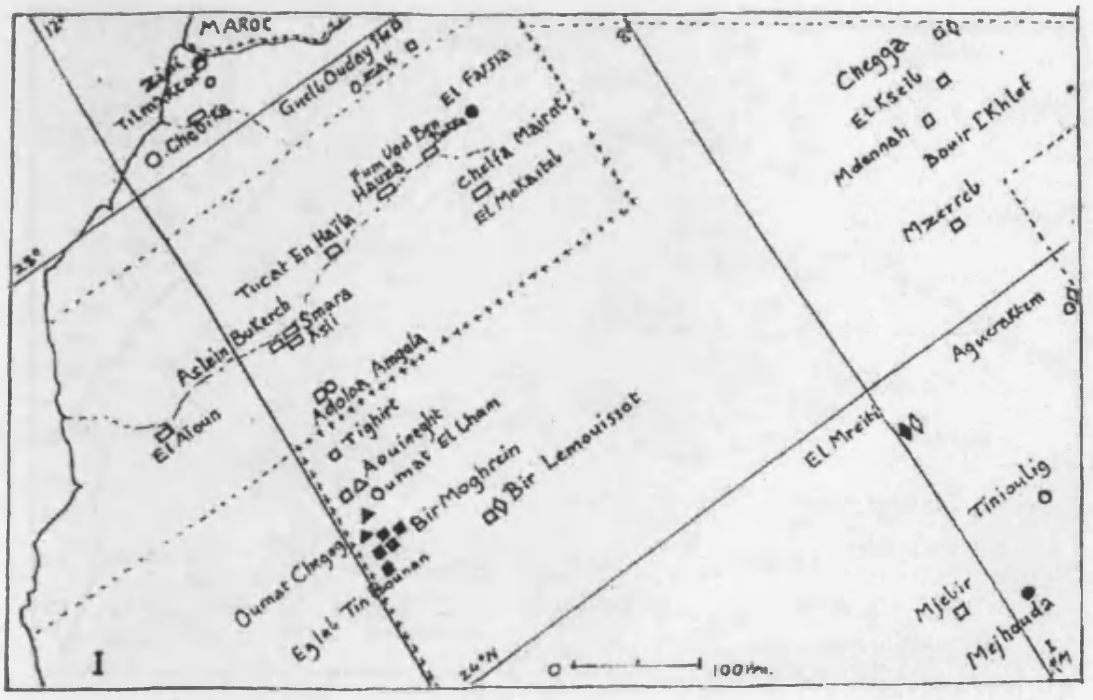
(Gerteiny 1967: 2)



Map 3

Geographical distribution of rock paintings and engravings in the Western Sahara

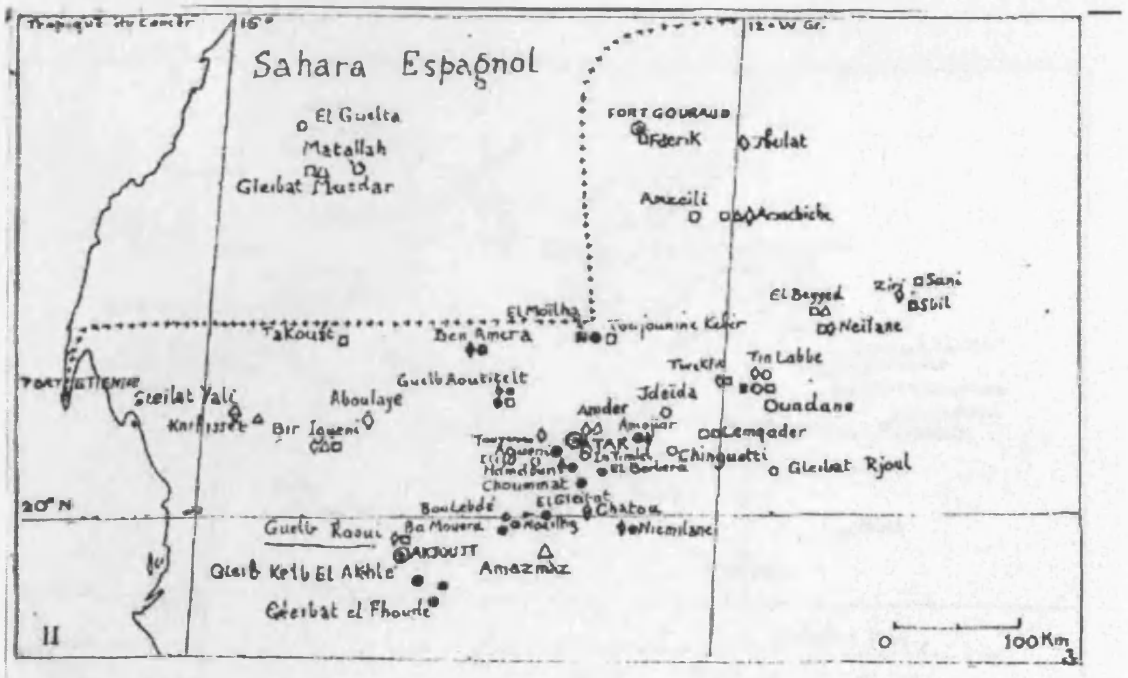
(Vernet 1993: 124)



Map 4

The distribution of rock art sites in the region of Seguiet el Hamra- Zemmour

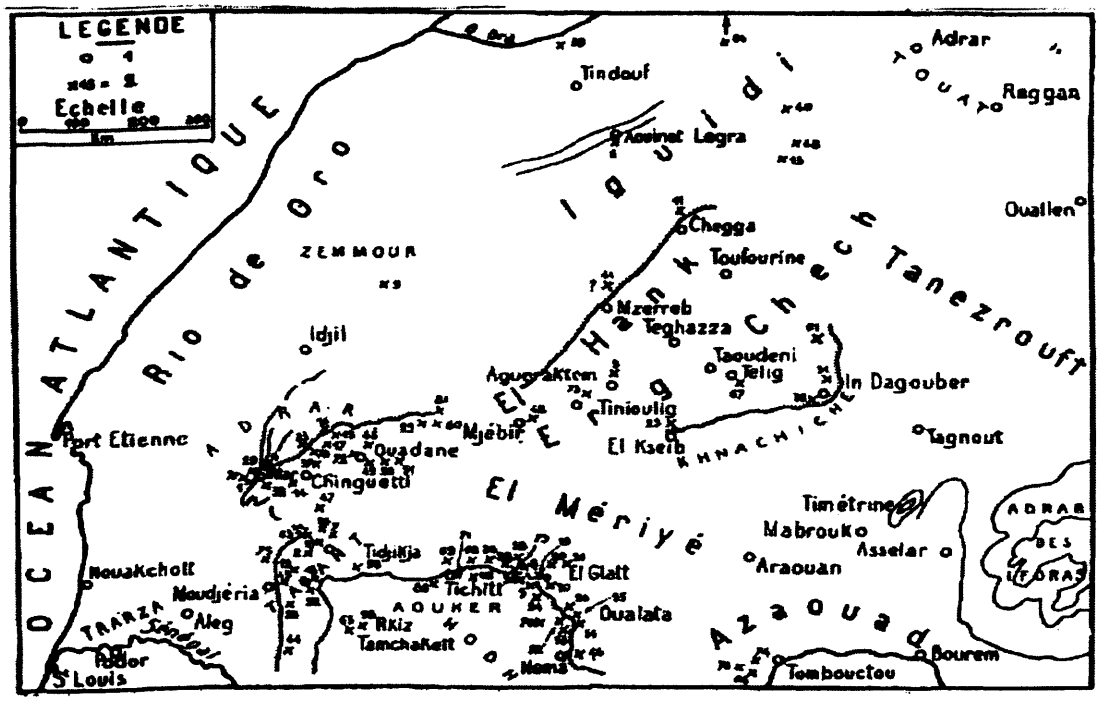
(Mauny 1954: 85)



Map 5

The distribution of rock art sites in the Mauritanian Adrar and neighbouring areas

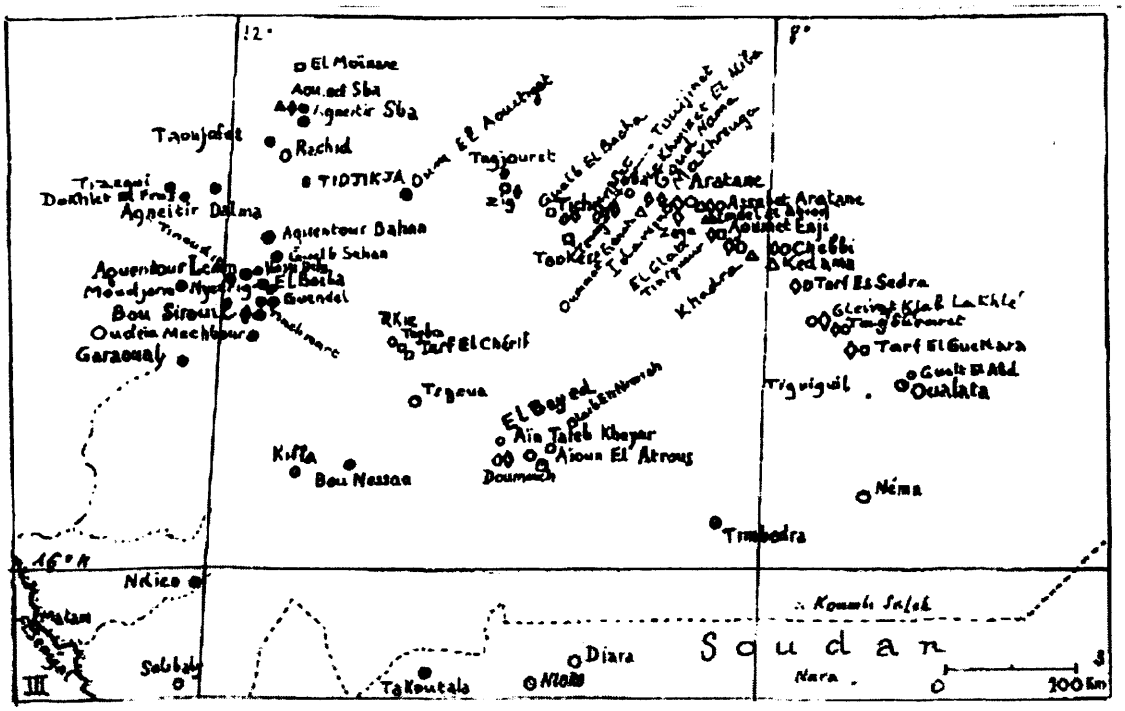
(Mauny 1954: 86)



Map 6

Rock art sites in the western Sahara

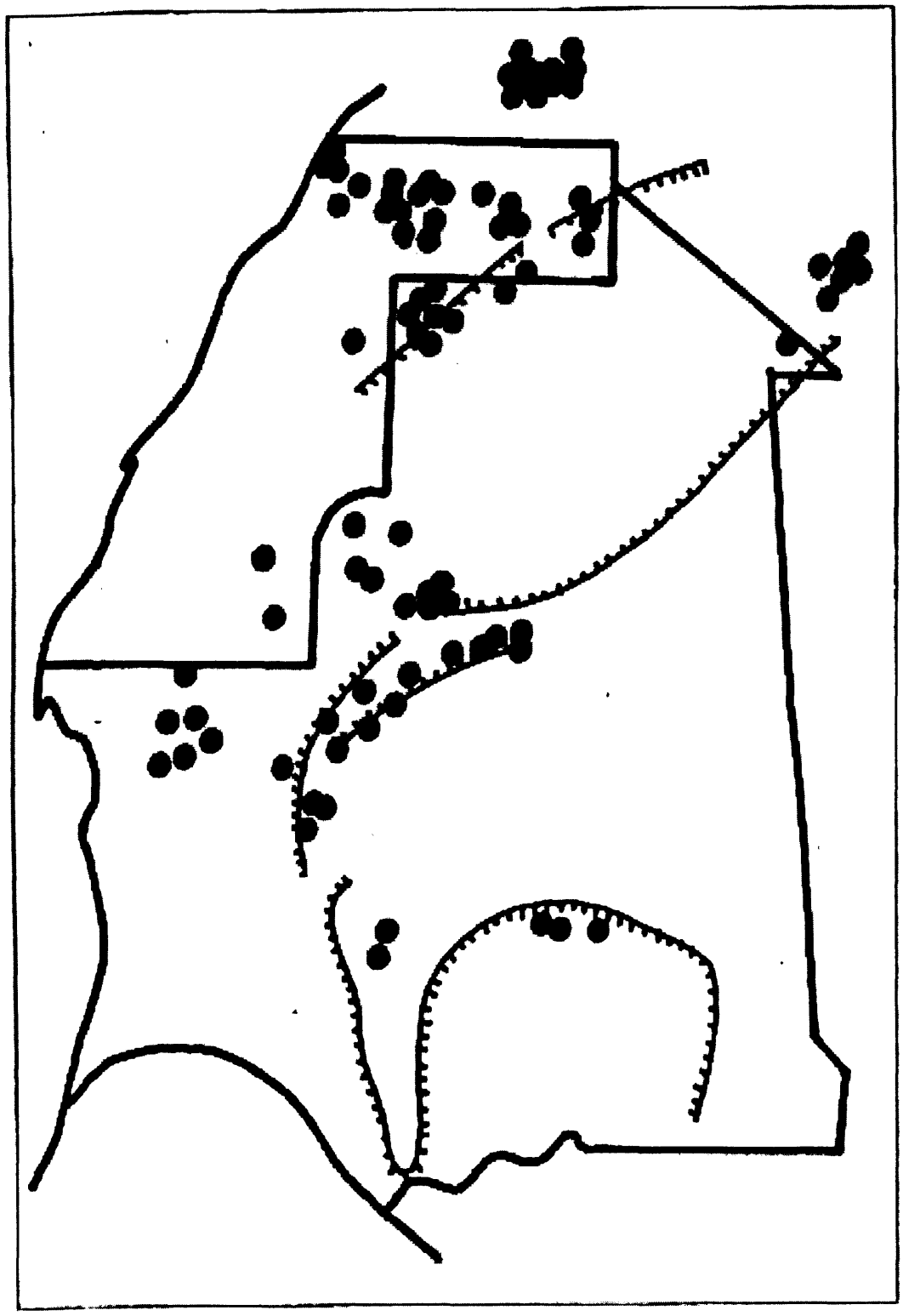
(Monod 1937: 196)



Map 7

Rock art sites in the the Tagant and Dhar Tichitt-Oualata

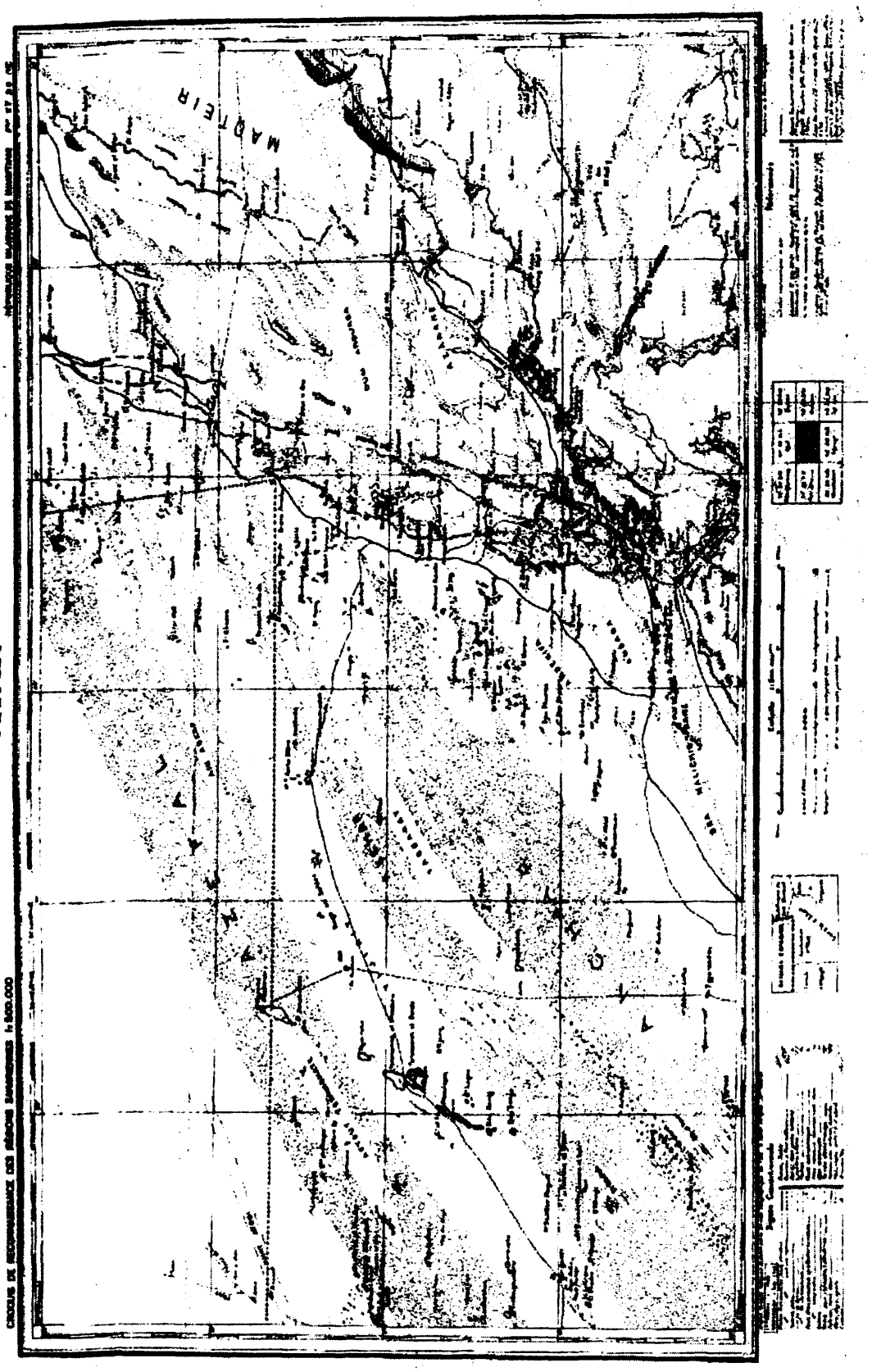
(Mauny 1954: 90)



Map 8

The distribution of the representations of mega fauna in Mauritania

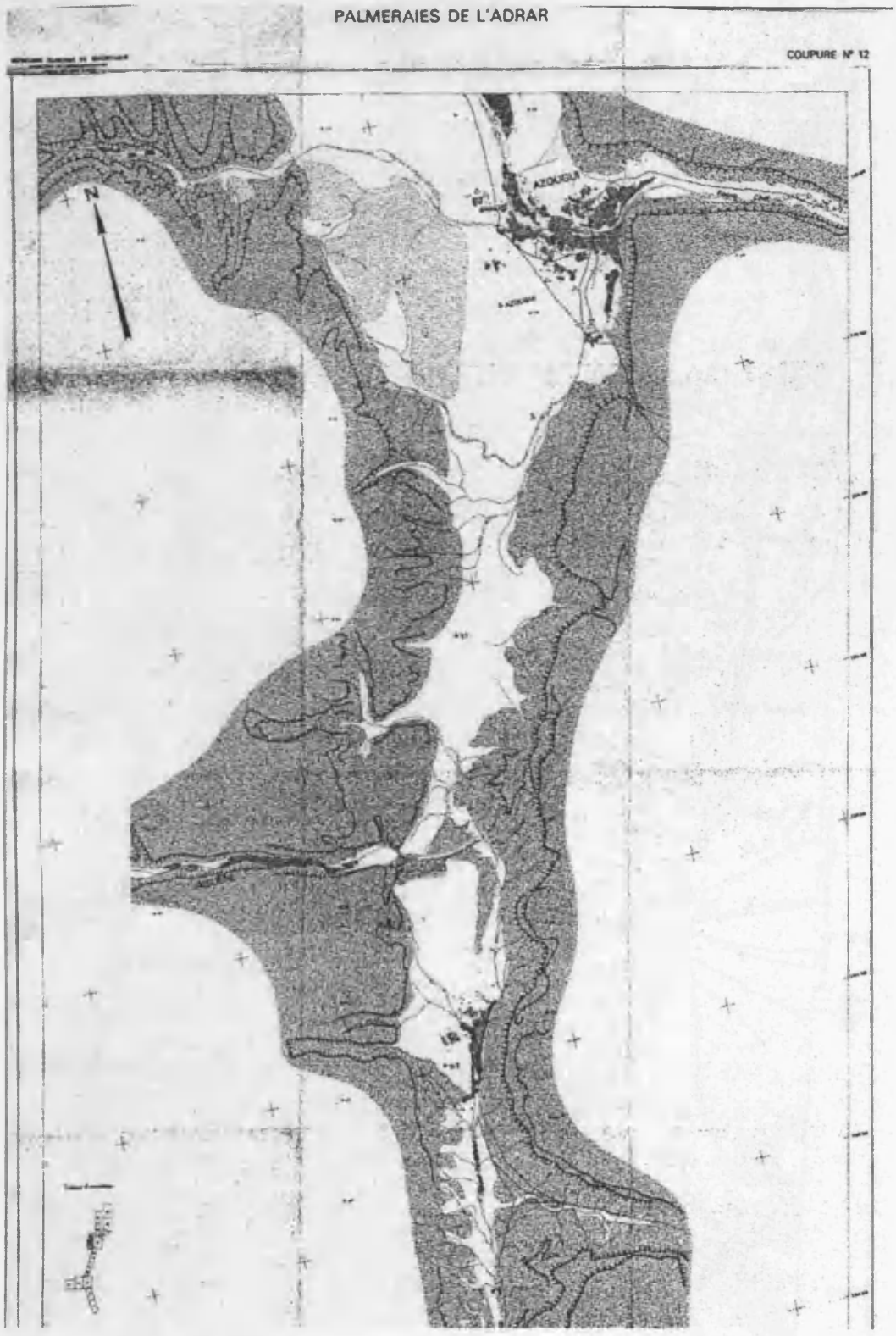
(Vernet 1993: 123)



Map 9

Atar region (Scale 1: 500,000)

(Le Service Géographique de l'A.O., Dakar, 2eme Edition, 1961)



Map 10

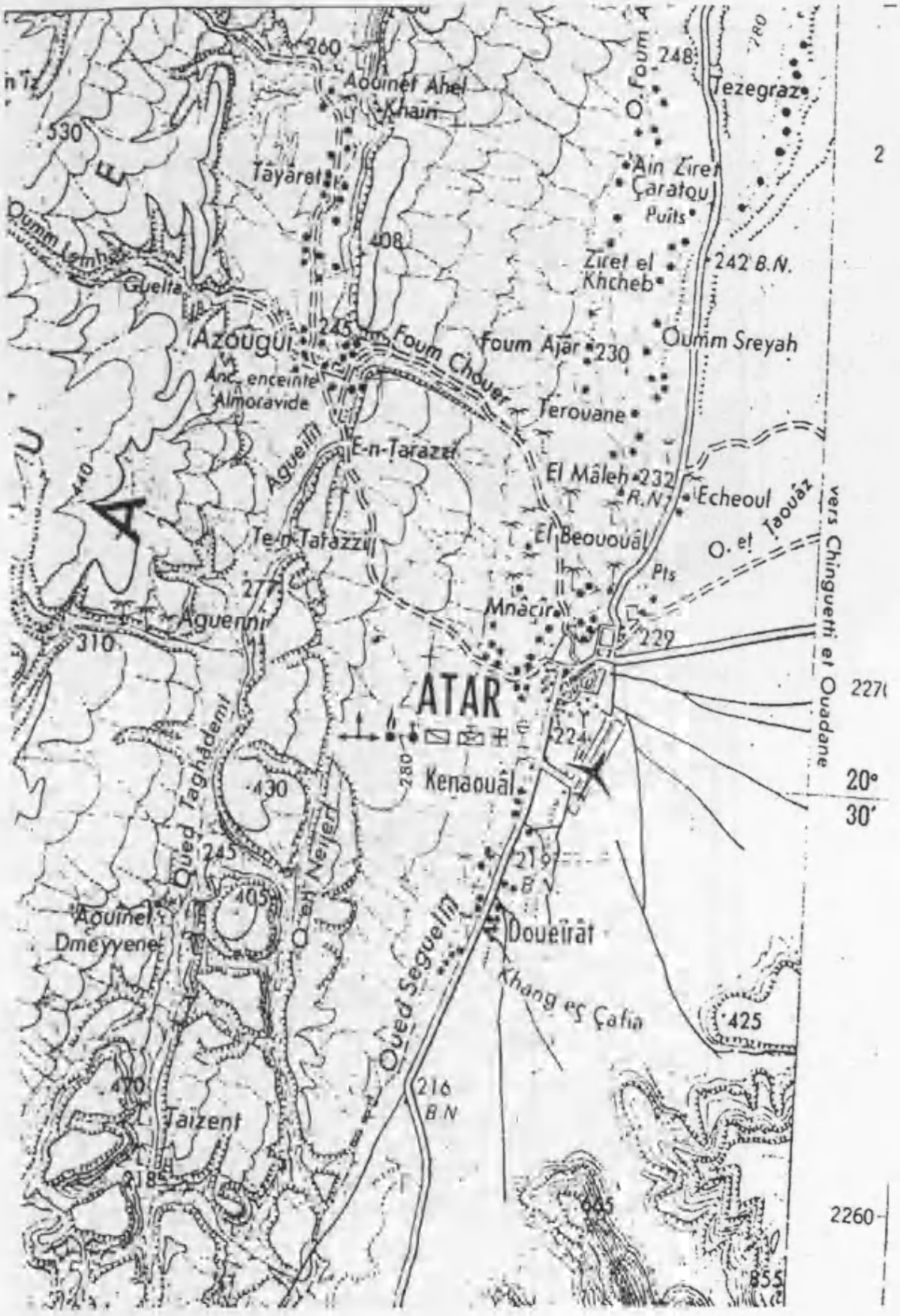
Adrar, including Azougui village and Foum Chor road (Scale 1: 15,000)

(République Islamique De Mauritanie, Ministère Du Développement, Service Du Génie Rural, Coupure N° 12, 1965)

Map 11

Topographic map of Atar (Mauritanian Adrar) (Scale 1: 200,000)

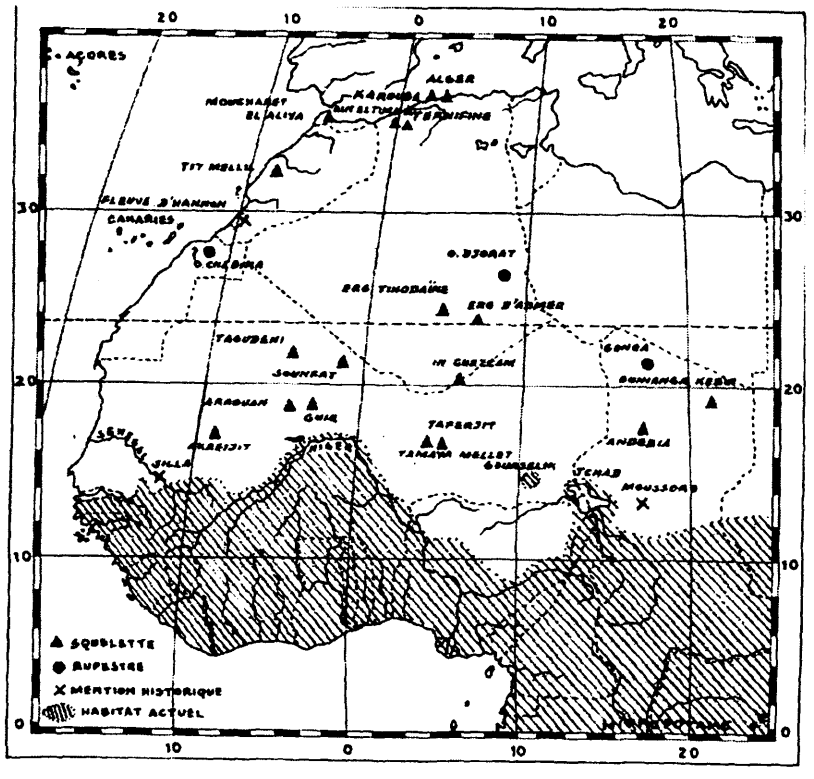
(L'Institut Géographique National France, 1972)



Map 12

The location of the two recorded rock art sites in northern Atar (Scale 1: 200,000)

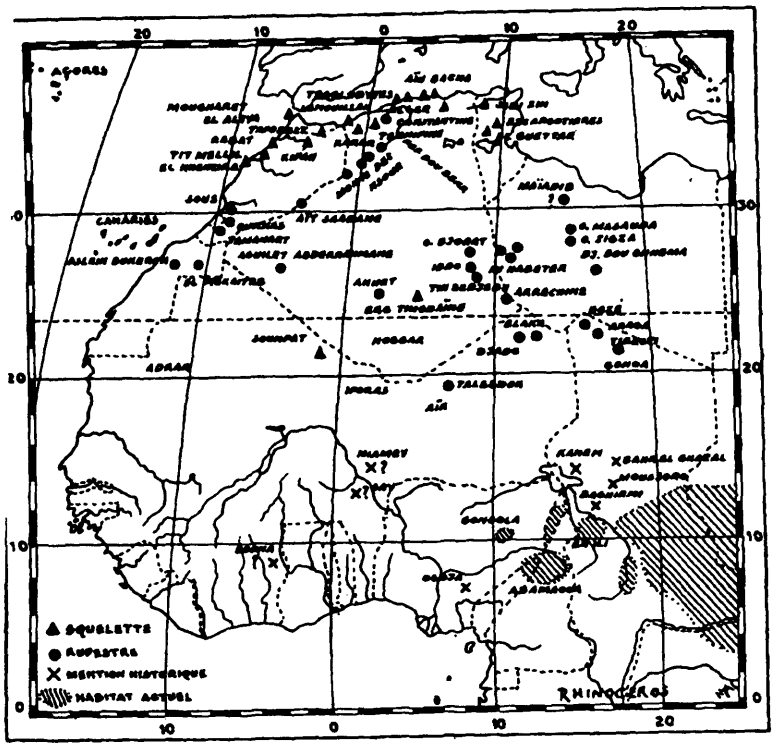
(L'Institut Géographique National France, 1972)



Map 13

Distribution of the hippopotamus in Northwest Africa

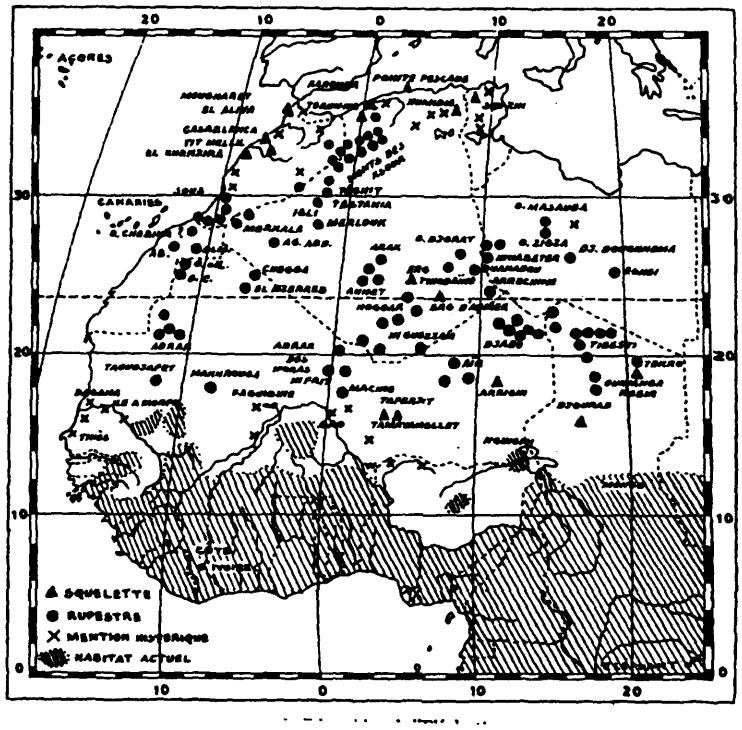
(Mauny 1957: 102)



Map 14

Distribution of rhinoceros in Northwest Africa

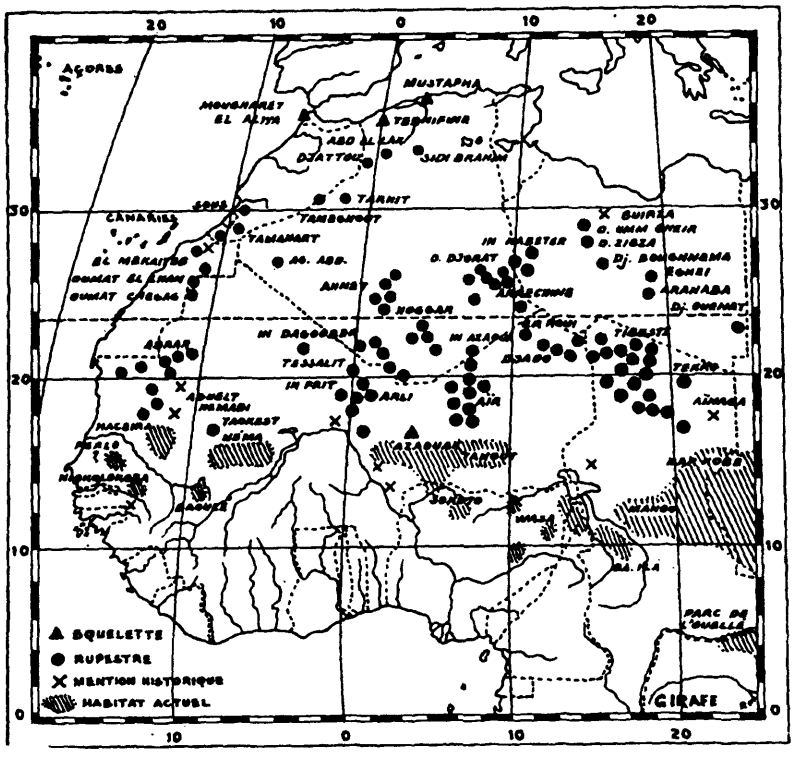
(Mauny 1957: 103)



Map 15

Distribution of elephant in Northwest Africa

(Mauny 1957: 104)



Map 16

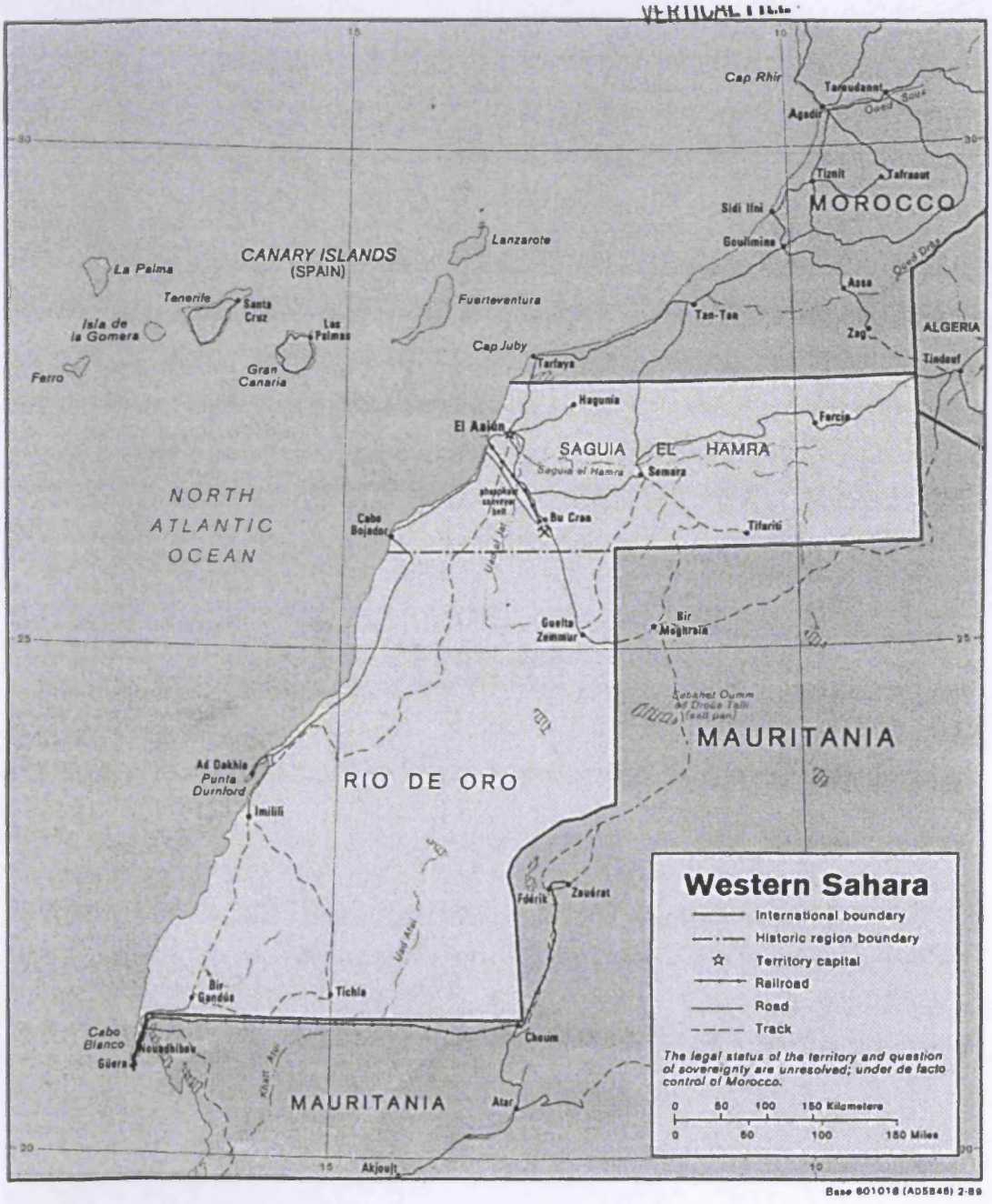
Distribution of Giraffe in Northwest Africa

(Mauny 1957: 105)

Map 17

Morocco

(Alaoui & Searight 1997: 90)



Map 18

Western Sahara

Figures

Previous work:

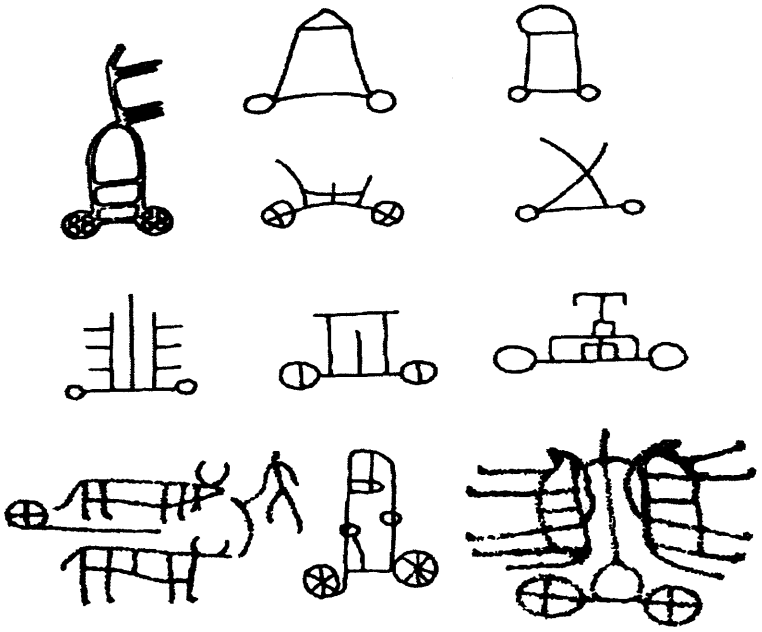


Figure a

Schematic engravings of the Mauritanian chariots

(Lhote 1982: 205)

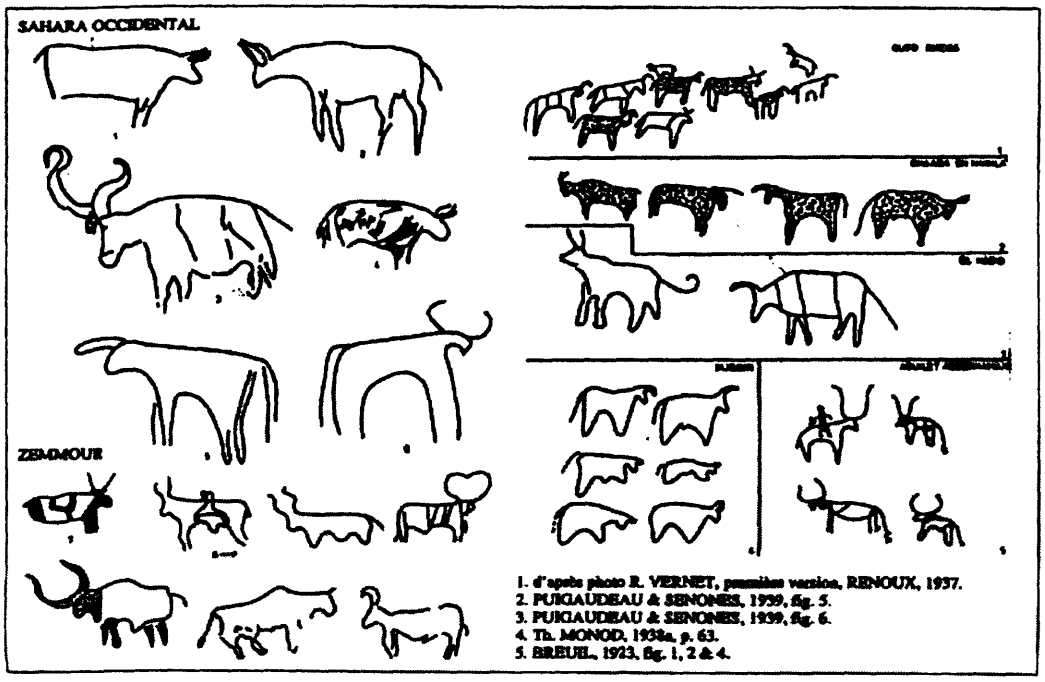


Figure b

Bovid representations (north of Mauritania)

(Vernet 1993: 140)

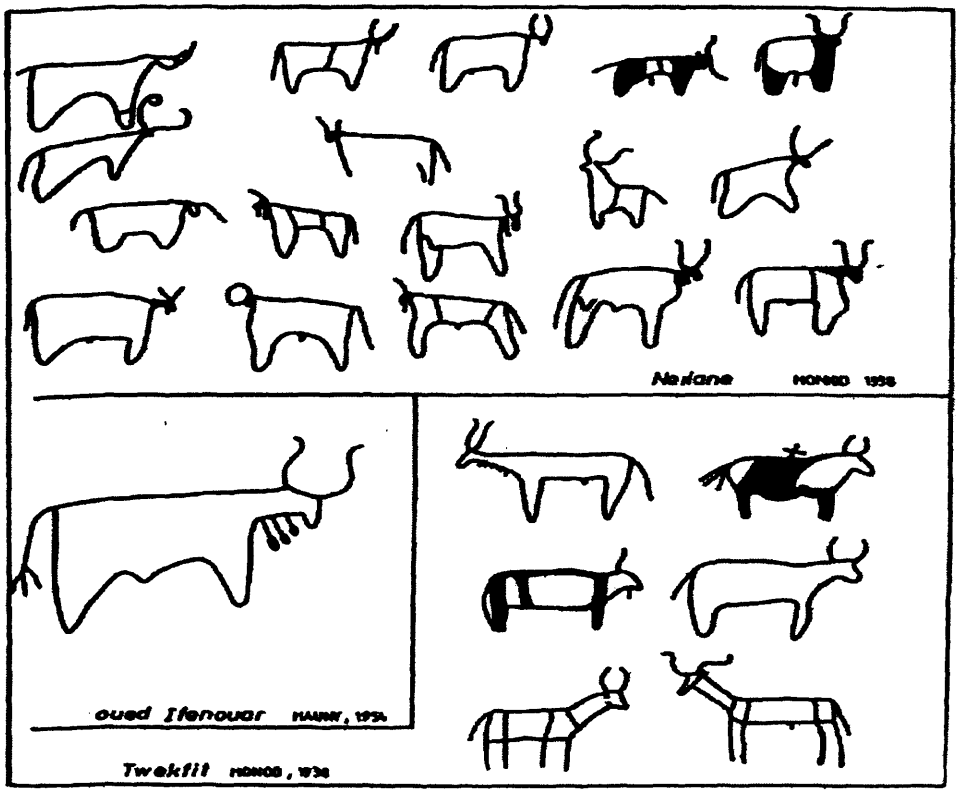


Figure c

Bovid representations (Mauritanian Adrar)

(Vernet 1993: 141)

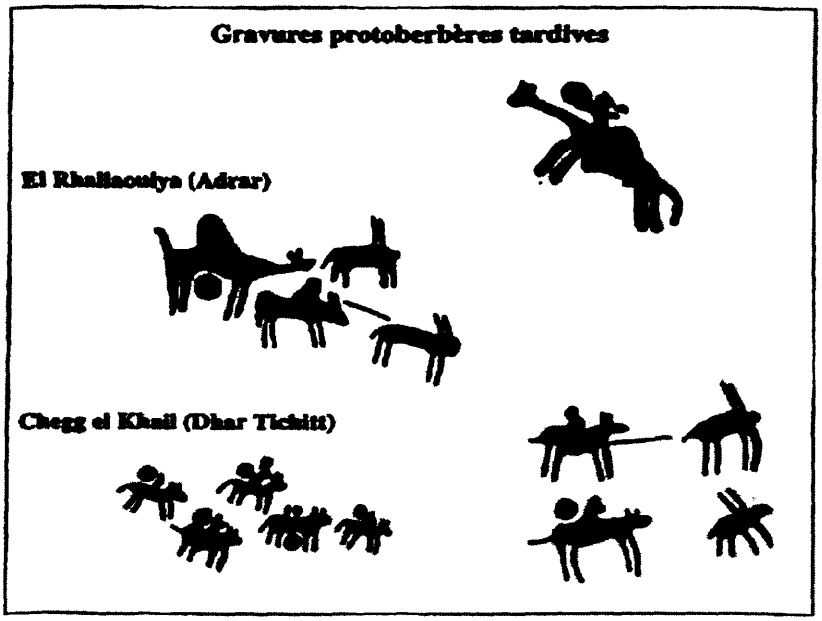


Figure d

Engravings of proto-Berber period

(Vernet 1993: 148)

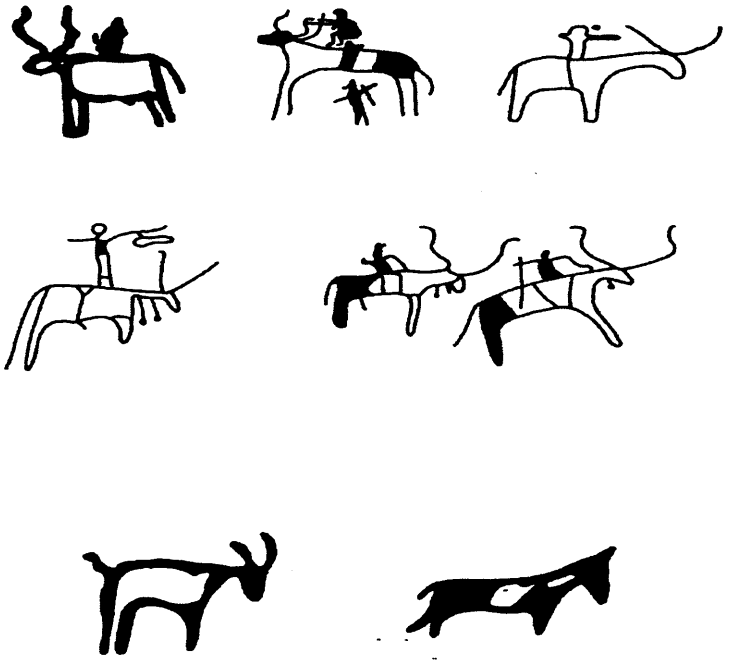


Figure e

Representations of bovids (El Rhallaouiya, Mauritanian Adrar)

(Vernet 1996: 124)

Figure f

Engravings and inscriptions from the western Sahara

(Monod 1937: 159)

Figure g

Engravings and inscriptions from the western Sahara

(Monod 1937: 158)

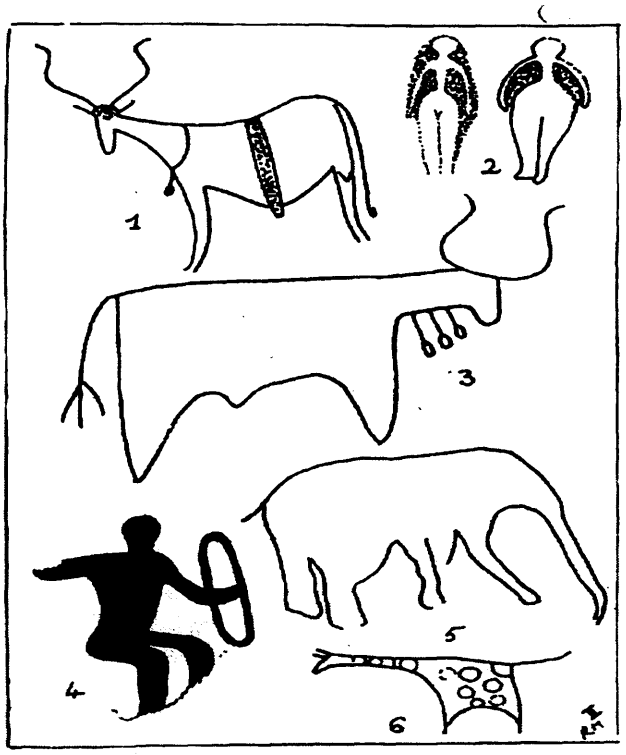


Figure h

Engravings of Cattle Herders (western Sahara)

(Mauny 1954: 10)

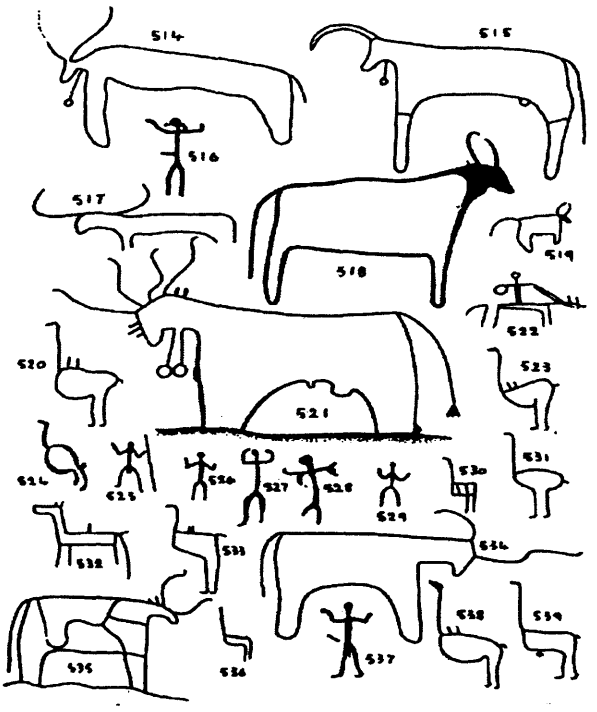


Figure i

Representations of El Beyyed II (Mauritanian Adrar)

(Monod 1938: 33)

Figure j

Representations from Neilane (Mauritanian Adrar)

(Monod 1938: 64)

Foum Chor Site:

General View

Figure 1

The Tayaret wadi as seen from Foum Chor site

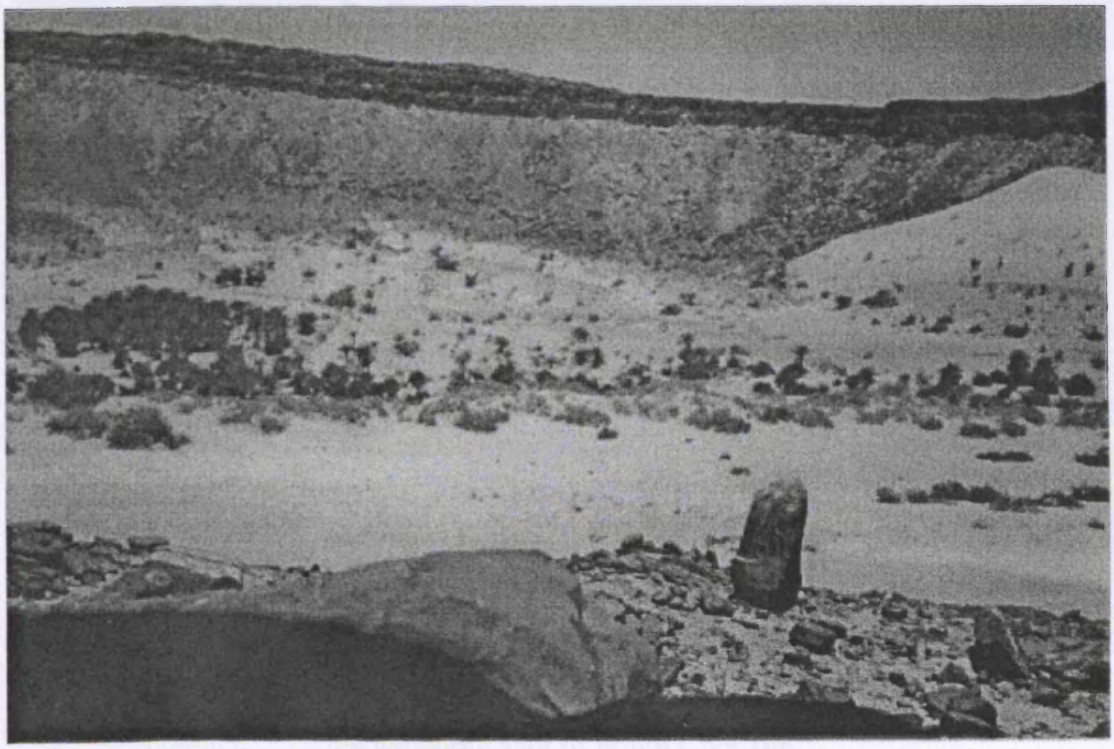


Figure 2

Foum Chor site as seen from the E-n-Tarazzi mountain

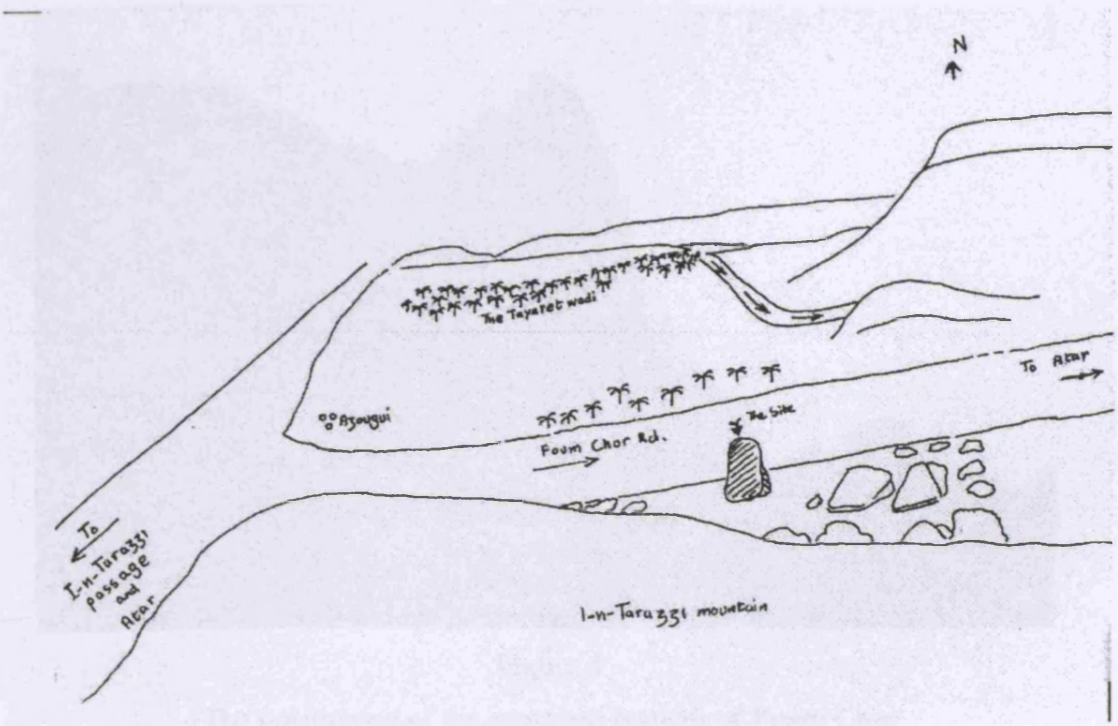


Figure 2a

A sketch showing the general appearance of Foum Chor site (arrow shows the engraved boulder)

Figure 3

Establishing shot of Foum Chor site

Figure 4

The positioning of the engraved boulder of Foum Chor

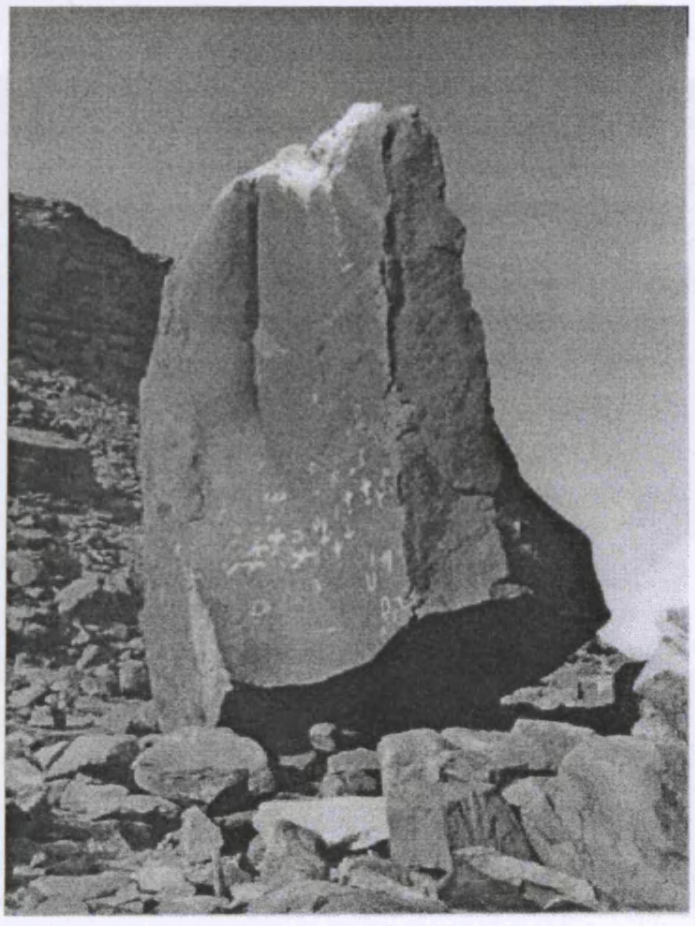


Figure 5

The positioning of Foum Chor boulder: close view

Figure 6

The positioning of Foum Chor boulder: closer view

Figure 7

The supportive pedestal sandstones of the engraved boulder of Foum Chor

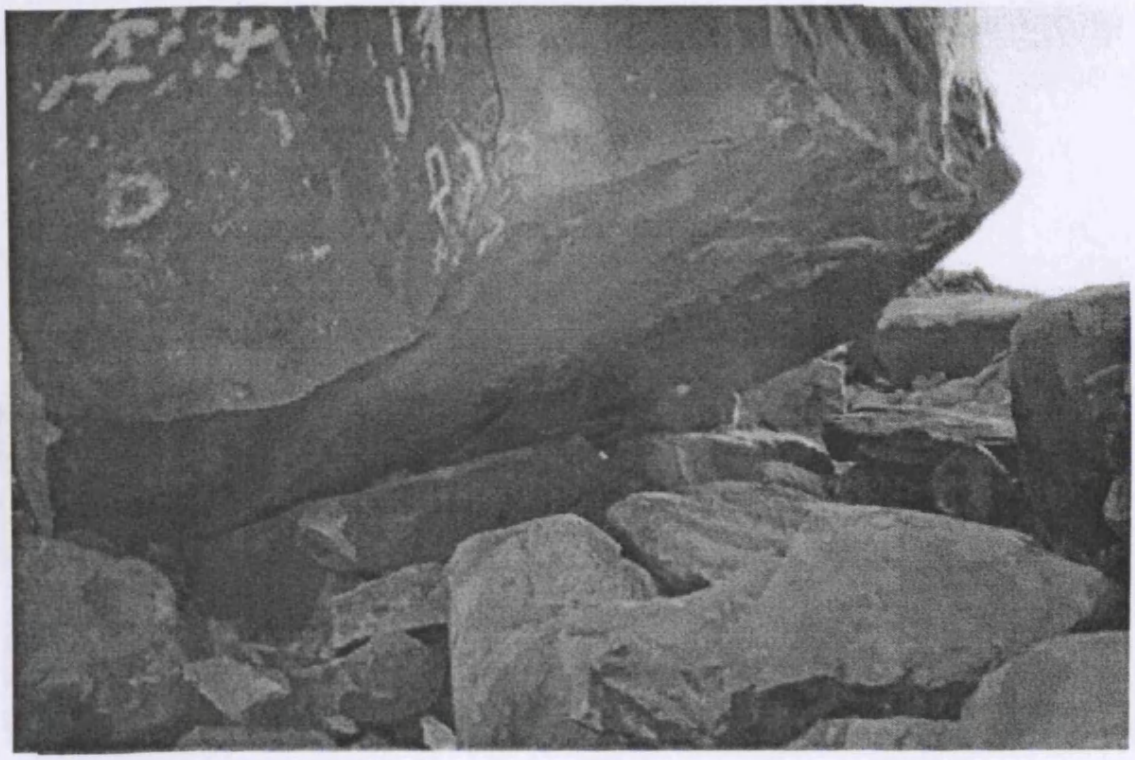


Figure 8

The supportive pedestal sandstones of the engraved boulder of Foum Chor: close view

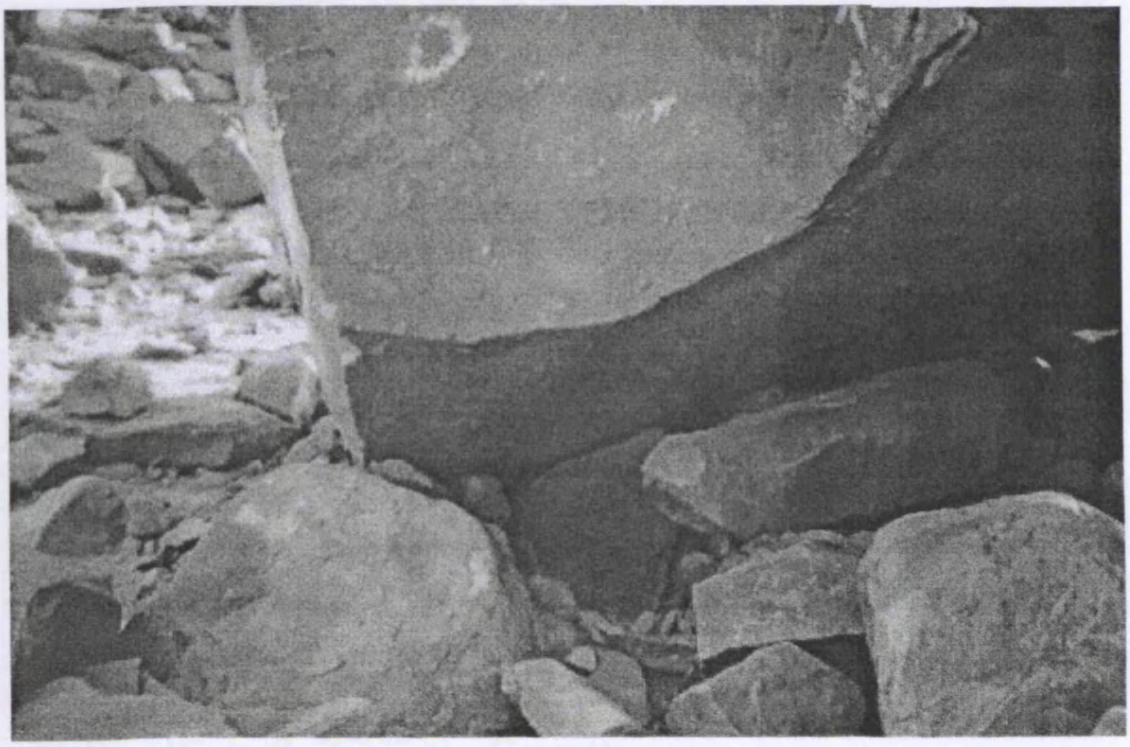


Figure 9

The supportive pedestal sandstones of the engraved boulder of Foum Chor: closer view

Figure 10

The engraved boulder of Foum Chor: long shot

Figure 11

Fallen rocks encumbering the base of I-n-Tarazzi Mountain (note the engraved boulder to the right)

Foum Chor Site:

Northern Face

Figure 12

The Northern Face of Foum Chor site: general view

Figure 13

The Northern Face of Foum Chor rock: establishing shot

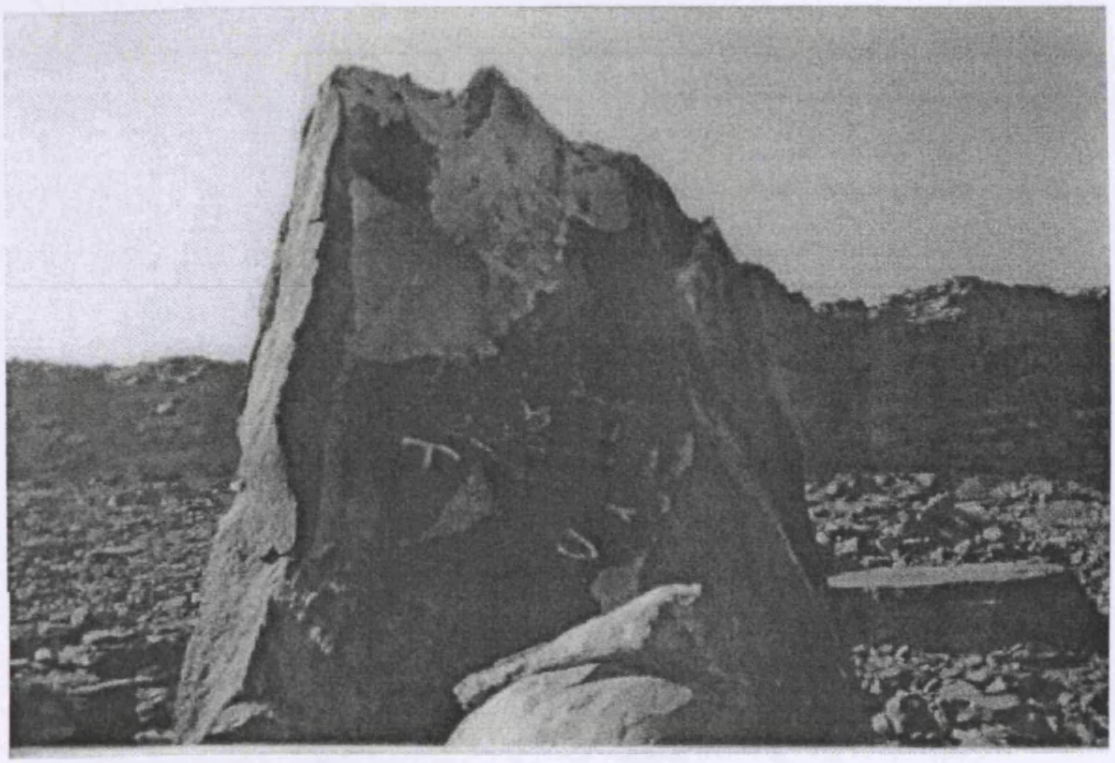


Figure 14

The engravings of the Northern Face of Foum Chor rock

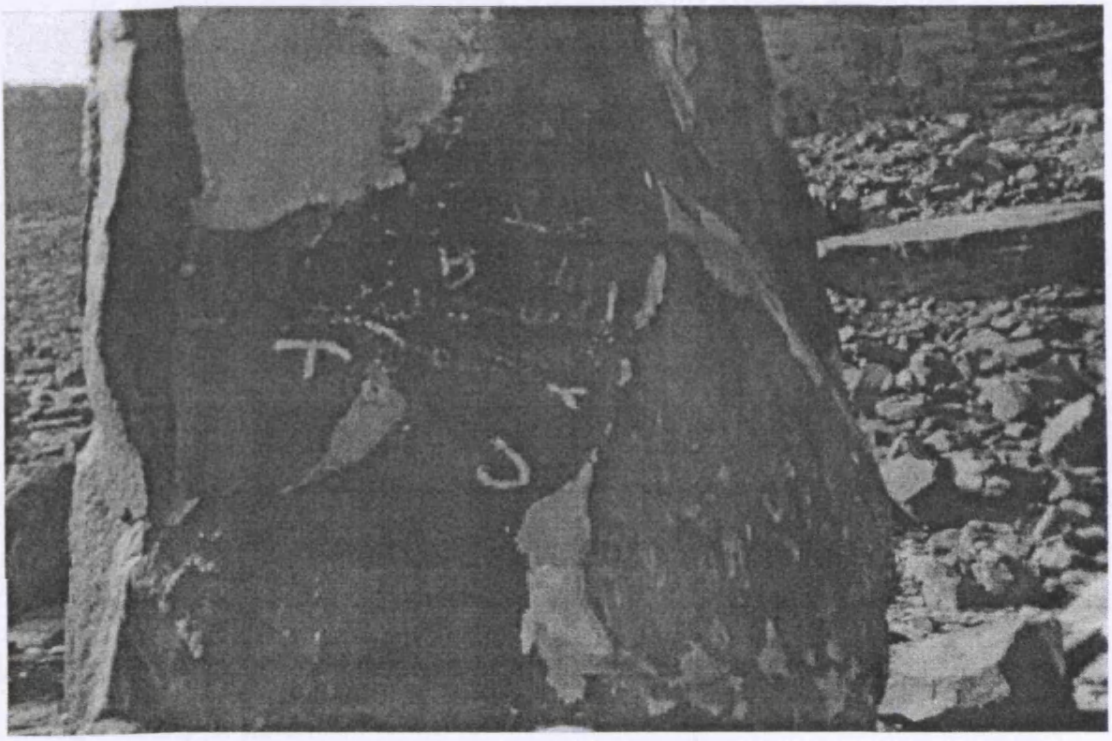


Figure 15

Closer view of the engravings of the Northern Face of Chor rock

Figure 16

The engravings of the Northern Face of Foum Chor rock: tracing

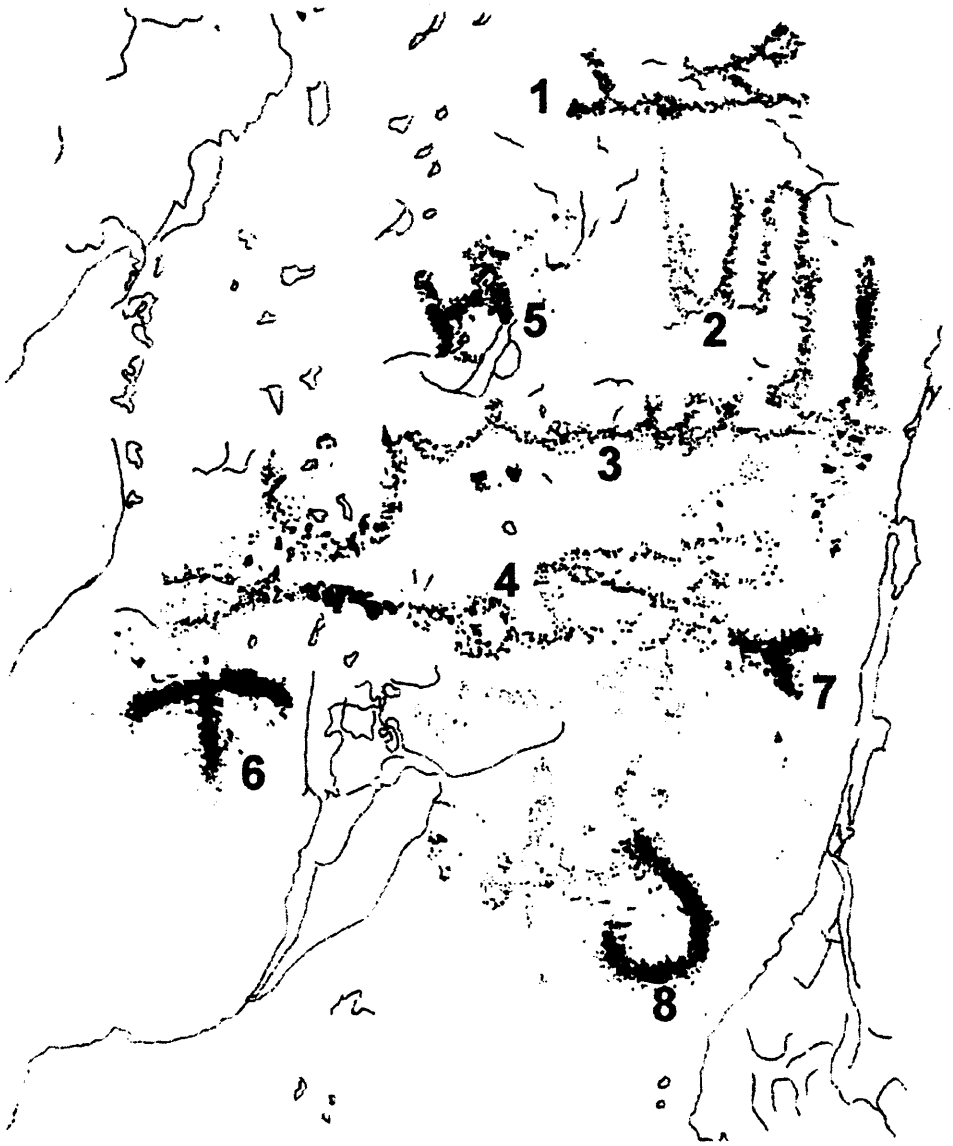


Figure 16a

The motifs of the Northern Face of Foum Chor rock

Foum Chor Site:

Southern Face

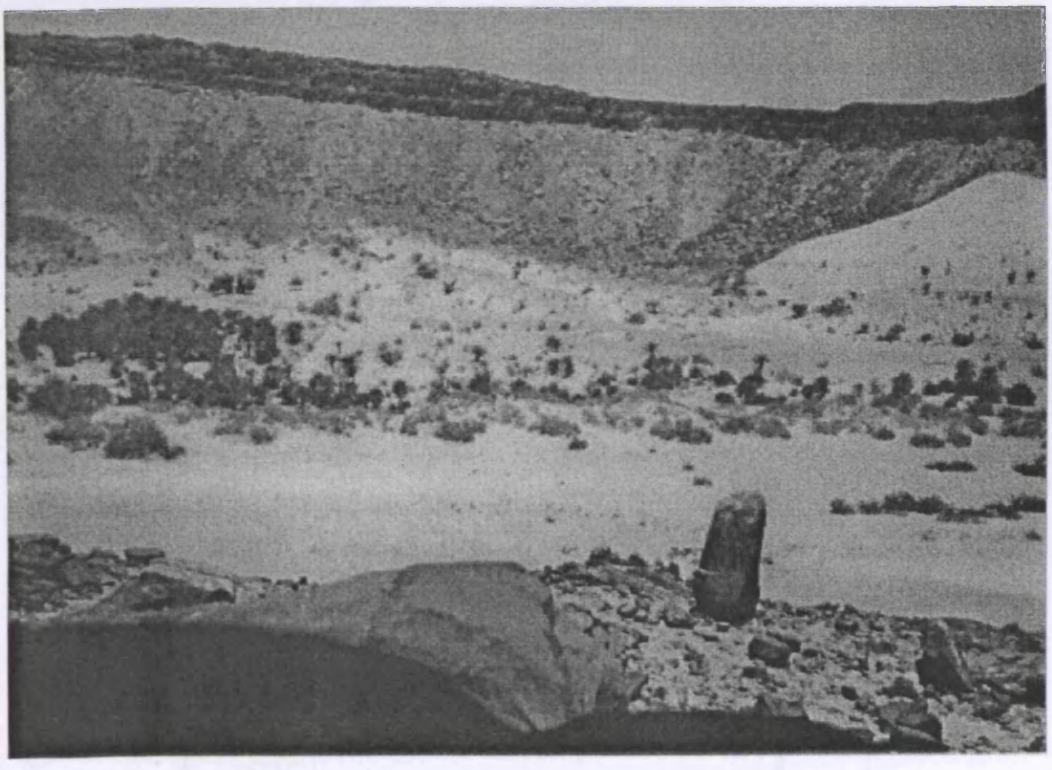


Figure 17

General view of the Southern Face of Foum Chor rock

Figure 18

Closer view of the Southern face of Foum Chor rock

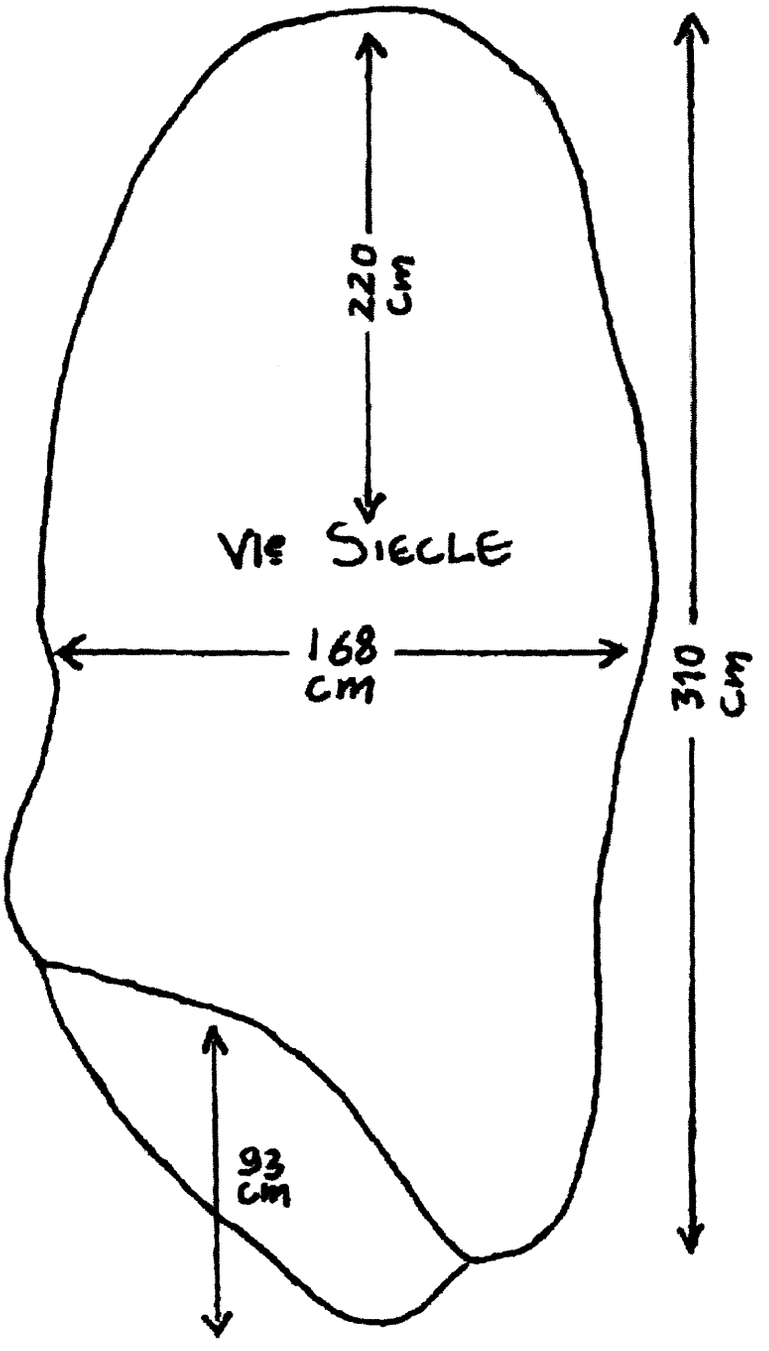


Figure 18a

The dimensions of the Southern Face of Foum Chor rock

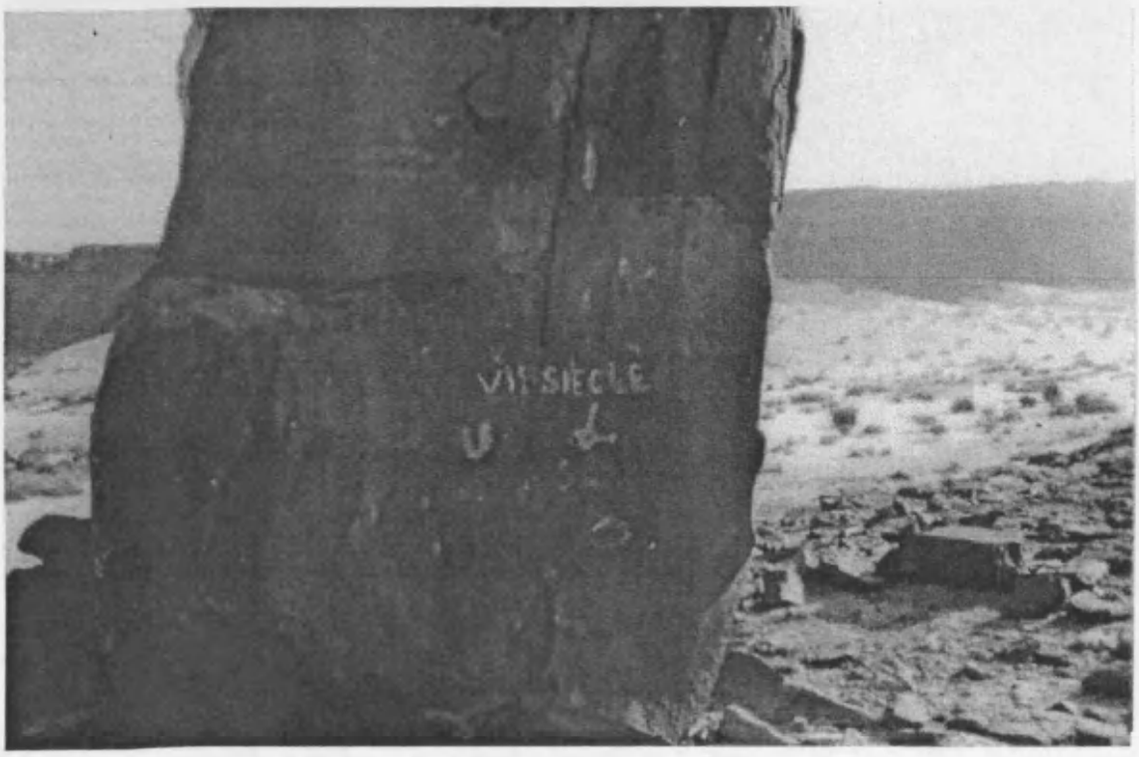


Figure 19

The engraved area of the Southern Face of Foum Chor rock

Figure 20

Cracks and fractures of the engraved area of the Southern Face of Foum Chor rock

Figure 21

The engravings of the Southern Face of Foum Chor rock

Figure 22

The engravings of the Southern Face Foum Chor rock: tracing

Figure 22a

The motifs of the Southern Face of Foum Chor rock

Foum Chor Site:

Eastern Face

Figure 23

General view of the Eastern Face of Foum Chor rock

Figure 24

The Eastern Face of Foum Chor rock: establishing shot

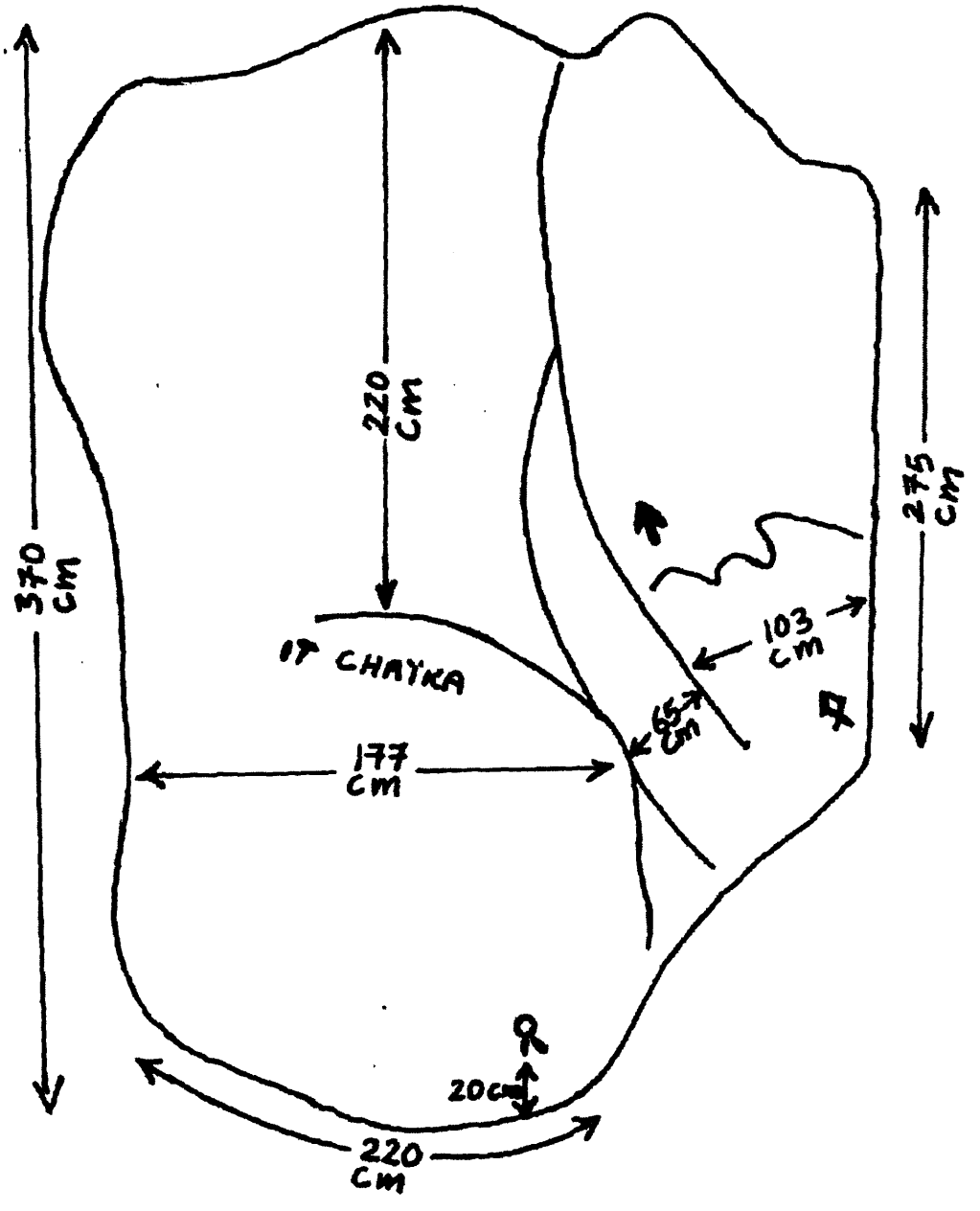


Figure 24a

The dimensions of the Eastern Face of Foum Chor rock

Figure 25

The Eastern Face of Foum Chor rock: establishing shot

Figure 26

The engraved area of the Eastern Face of Foum Chor rock

Figure 27

Left and Right Sides of the Eastern Face of Foum Chor rock

Figure 28

The engravings on the Left Side of the Eastern Face of Foum Chor rock: tracing

Figure 28a

The motifs on the Left Side of the Eastern Face of Foum Chor rock

Figure 29

General view of the engravings on the Left and Right Sides of the Eastern Face of Foum Chor rock

Figure 30

The two portions of the Right Side of the Eastern Face of Foum Chor rock

Figure 31

The engravings on the Right Portion of the Right Side of the Eastern Face of Foum Chor rock: tracing

Figure 31a

The motifs on the Right Portion of the Right Side of the Eastern Face of Foum Chor rock

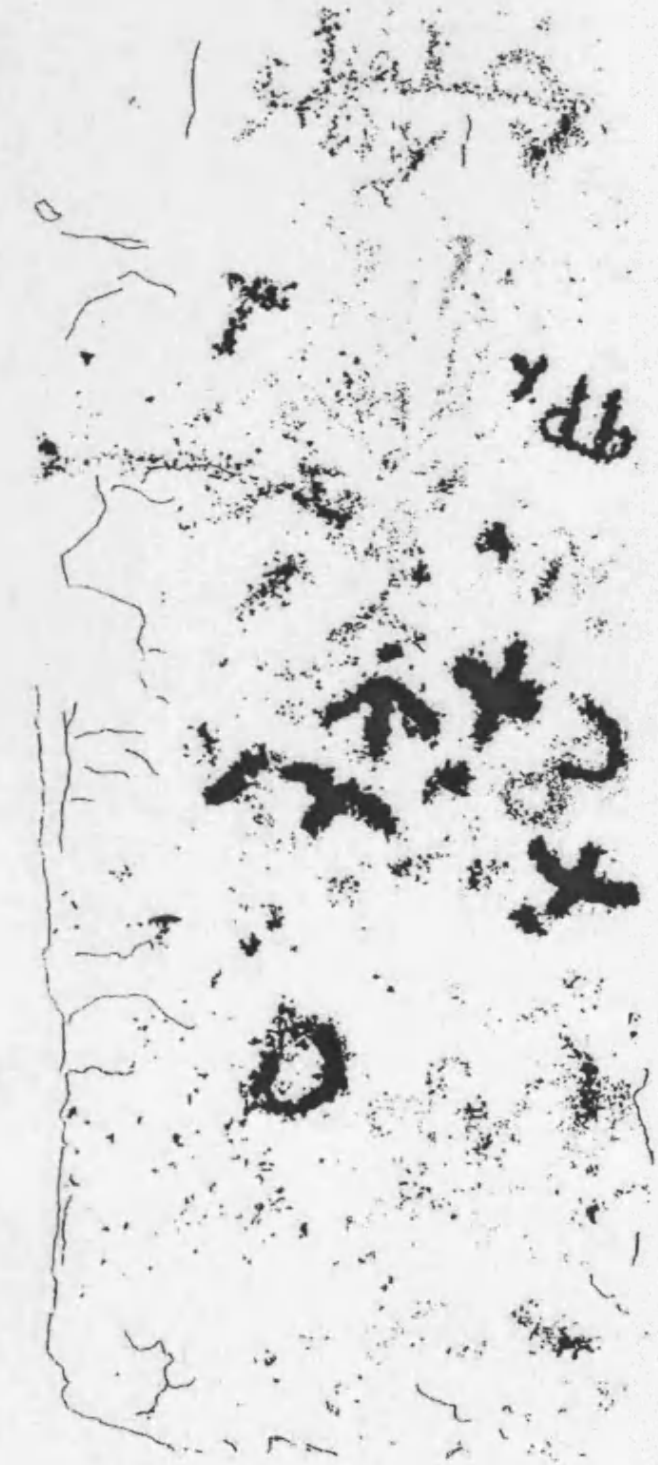


Figure 32

The engravings on the Left Portion of the Right Side of the Eastern Face of Foum Chor rock: tracing

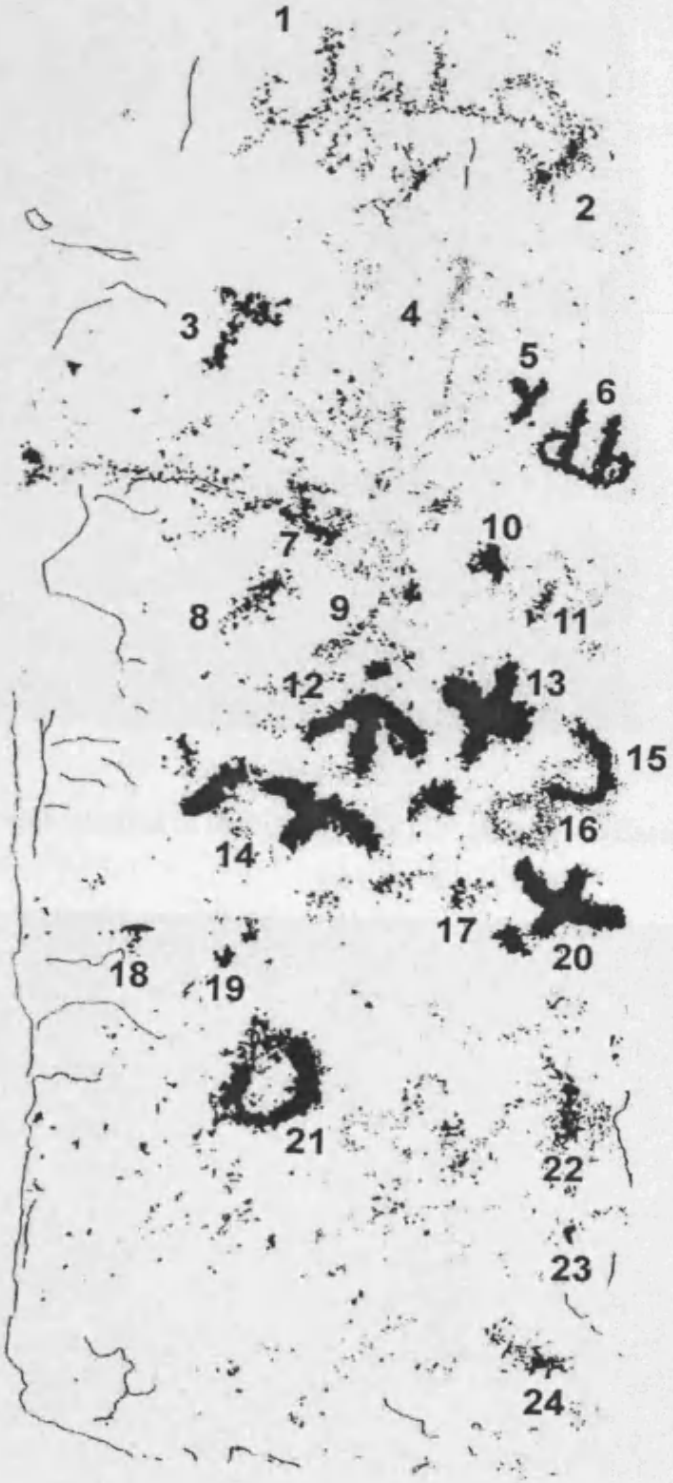


Figure 32 a

The motifs on the Left Portion of the Right Side of the Eastern Face of Foum Chor rock

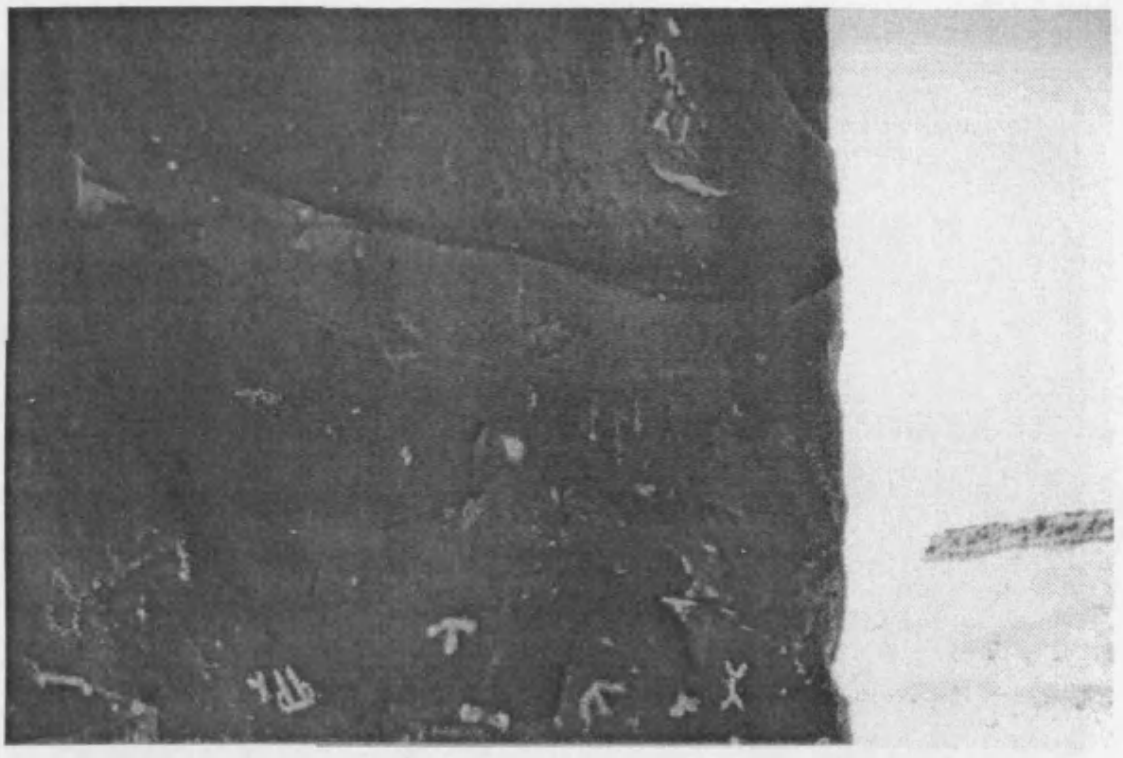


Figure 33

Arabic inscriptions scratched in the top of the Right Side of the Eastern Face of Foum rock

Figure 34

Arabic inscriptions on the Right Portion of the Right Side of the Eastern Face of Foum rock (details)

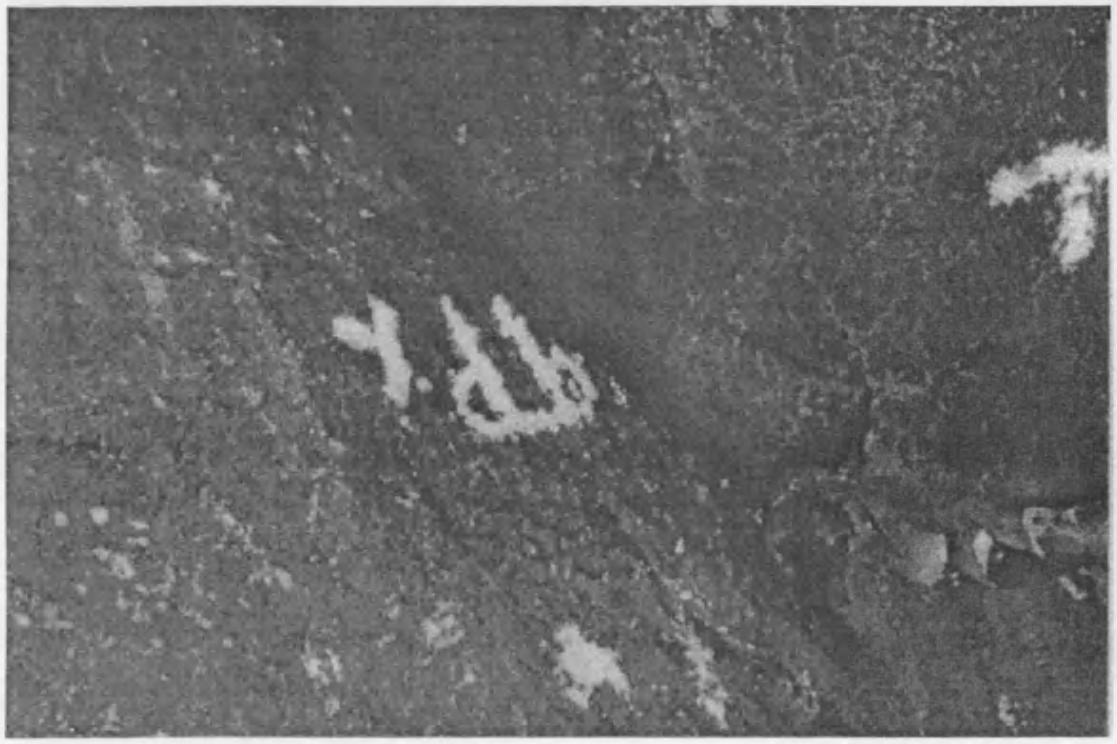


Figure 35

A part of the geometric motifs on the Right Side of the Eastern Face of Foum Chor rock (details)

Figure 36

A part of the geometric motifs of the Eastern Face of Foum Chor rock

Figure 37

A part of the geometric motifs of the Left Side of the Eastern Face of Foum Chor rock

Figure 38

A part of the geometric motifs of the Eastern Face of Foum Chor rock

Figure 39

Detail of the geometric motifs of the Left Side of the Eastern Face of Foum Chor rock

Figure 40

Detail of the geometric motifs of the Left Side of the Eastern Face of Foum Chor rock

Figure 41

Detail of the geometric motifs of the Left Side of the Eastern Face of Foum Chor rock

Figure 42

The position of the other engraved rock of Foum Chor site

Figure 43

The unpatinated Arabic inscription of the other engraved rock of Foum Chor site

Figure 44

The unpatinated Arabic inscription of the other engraved rock of Foum Chor site (from different angle)

Foum Chor Site:

Western Face

Figure 45

The Western Face of Foum Chor rock: establishing shot

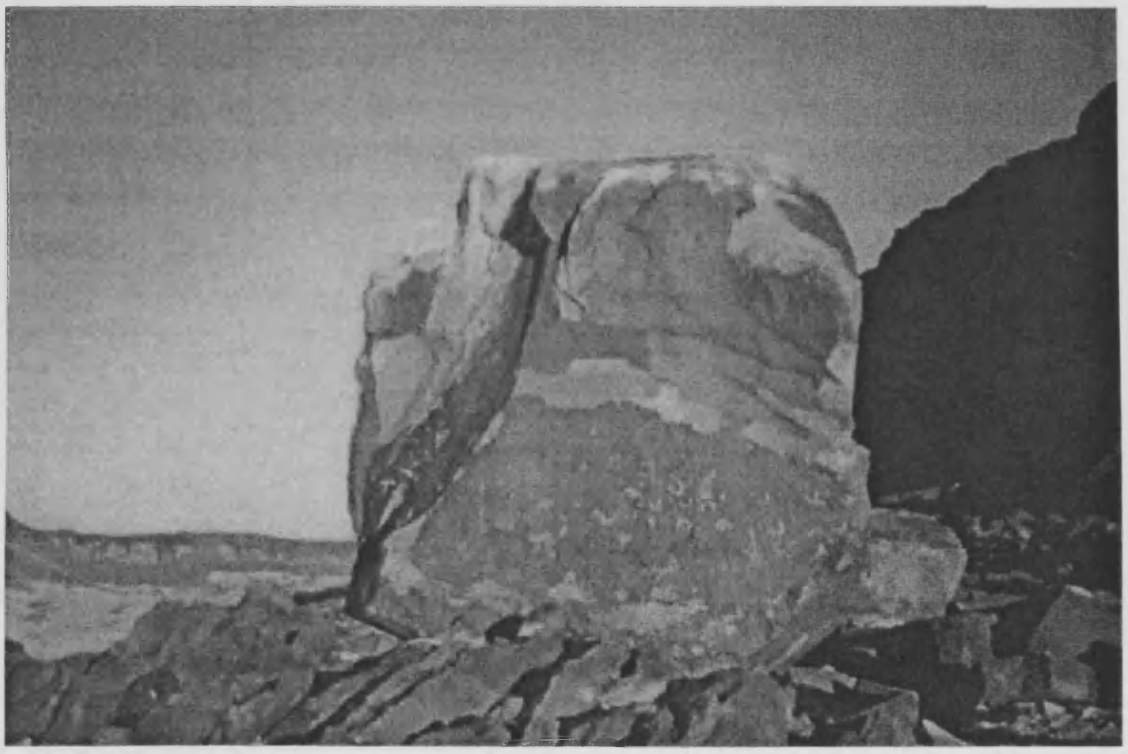


Figure 46

The Western Face of Foum Chor rock: close view

Figure 47

The Western Face of Foum Chor rock: close view

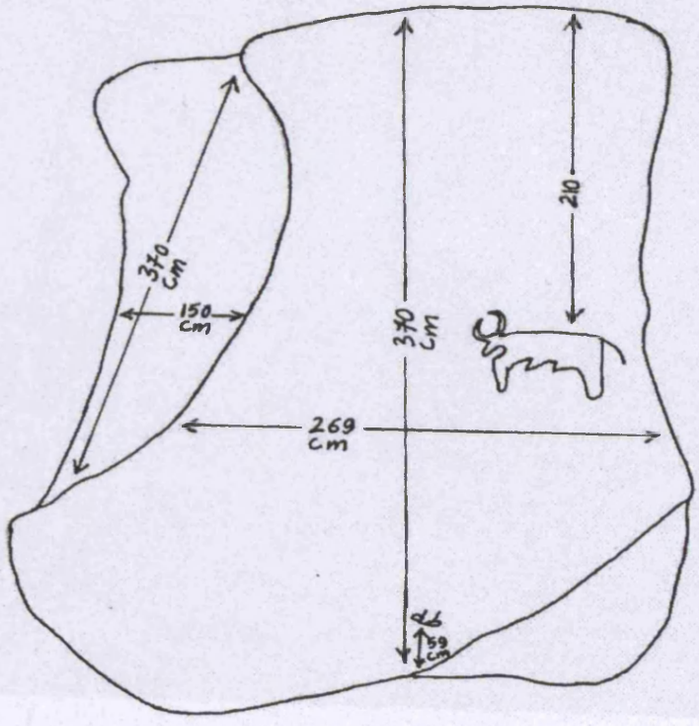


Figure 47a

The dimensions of the Western and Northern Faces of Foum Chor rock

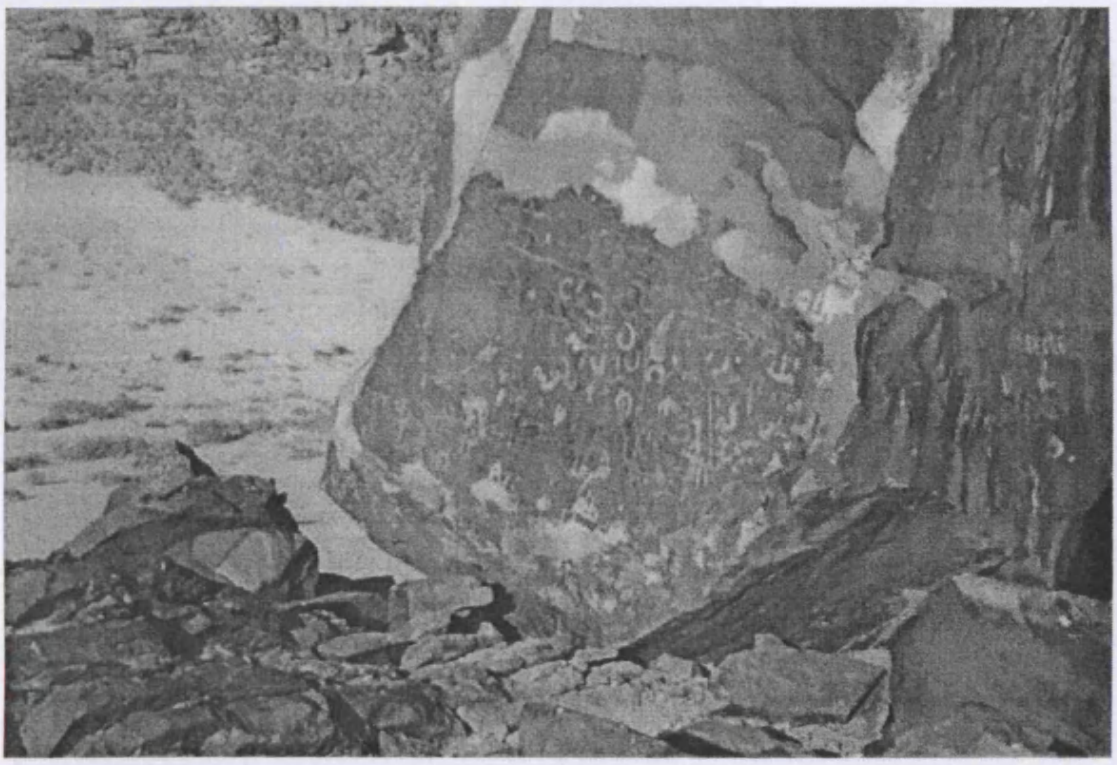


Figure 48

The Western Face of Foum Chor rock: side-view

Figure 49

The Western Face of Foum Chor rock: front-view

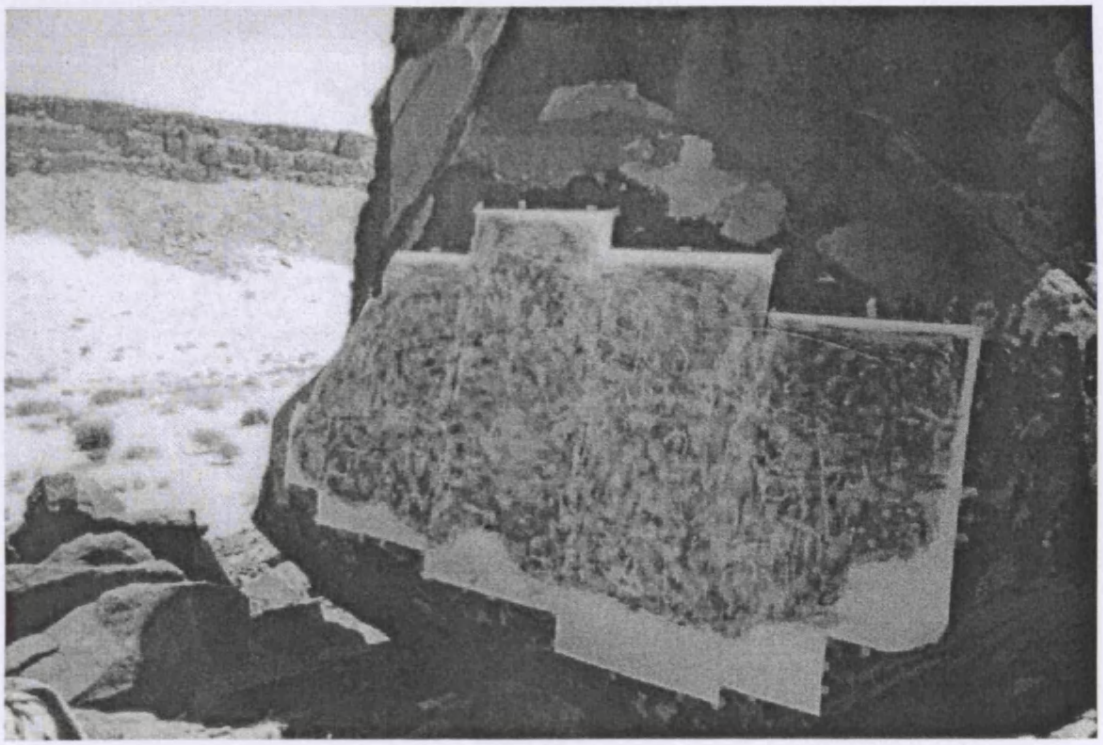


Figure 50

Recording of the Western Face of Foum Chor rock by making a rubbing on paper

Figure 50a

The Western Face of Foum Chor rock: rubbing

Figure 51

The Western Face of Foum Chor rock: tracing

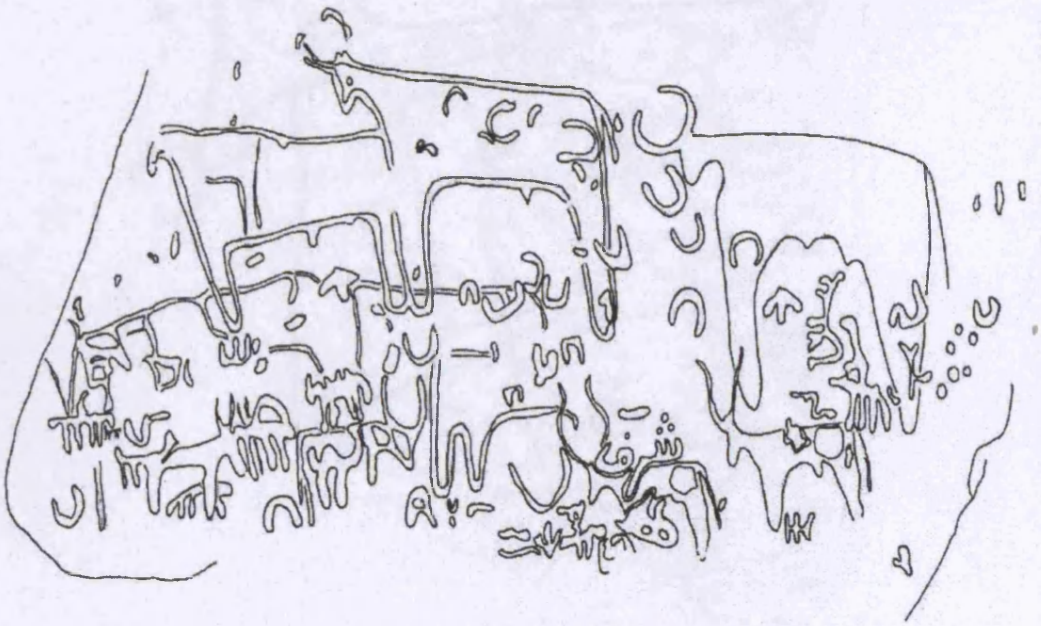


Figure 52

The Western Face of Foum Chor rock: drawing from the tracing

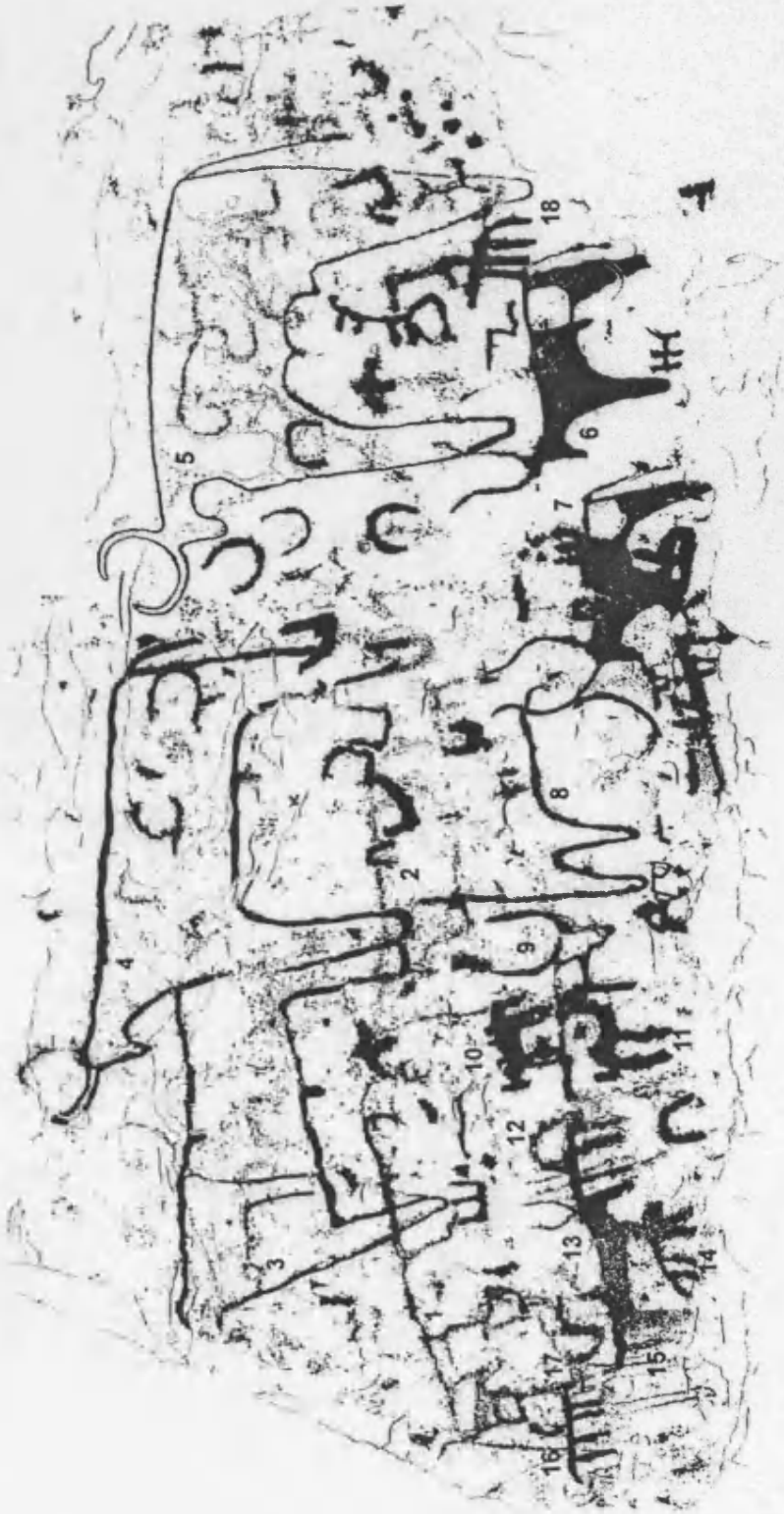


Figure 53a

The anthropomorphic motifs of the Western Face of Foum Chor rock

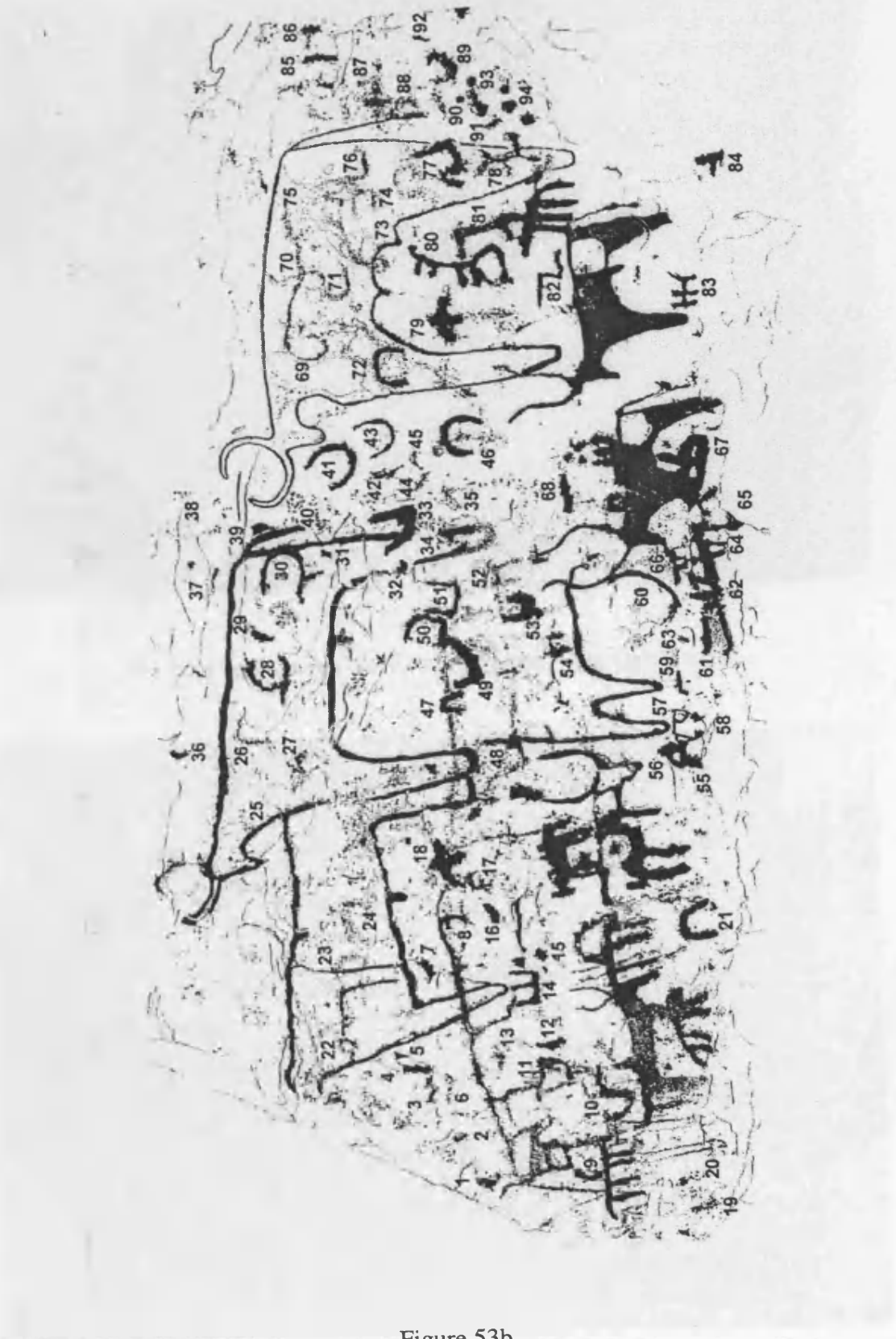


Figure 53b

The geometric motifs of the Western Face of Foum Chor rock

Figure 54

The engraved area of the Western Face of Foum Chor rock

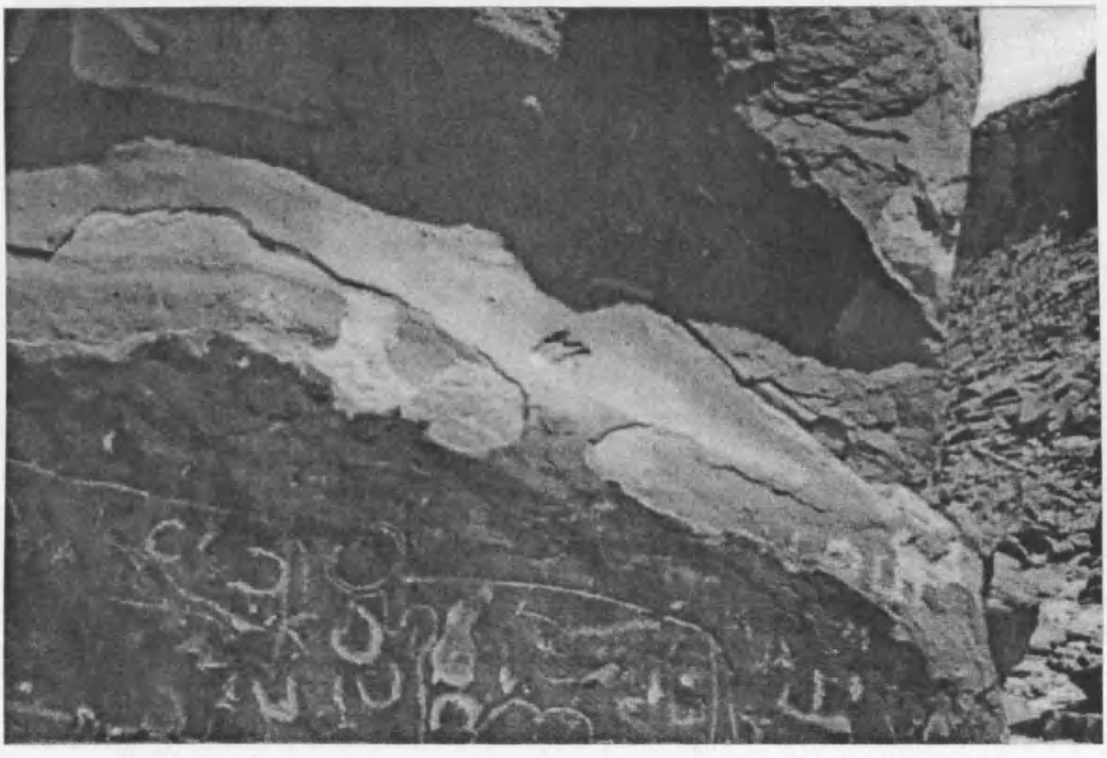


Figure 55

Damage to the upper part of the Western Face of Foum Chor rock from fissures

Figure 56

Side-view of the upper part of the Western Face of Foum Chor rock

Figure 57

A natural left-hand-like imprint on the upper part of the Western Face of Foum Chor rock

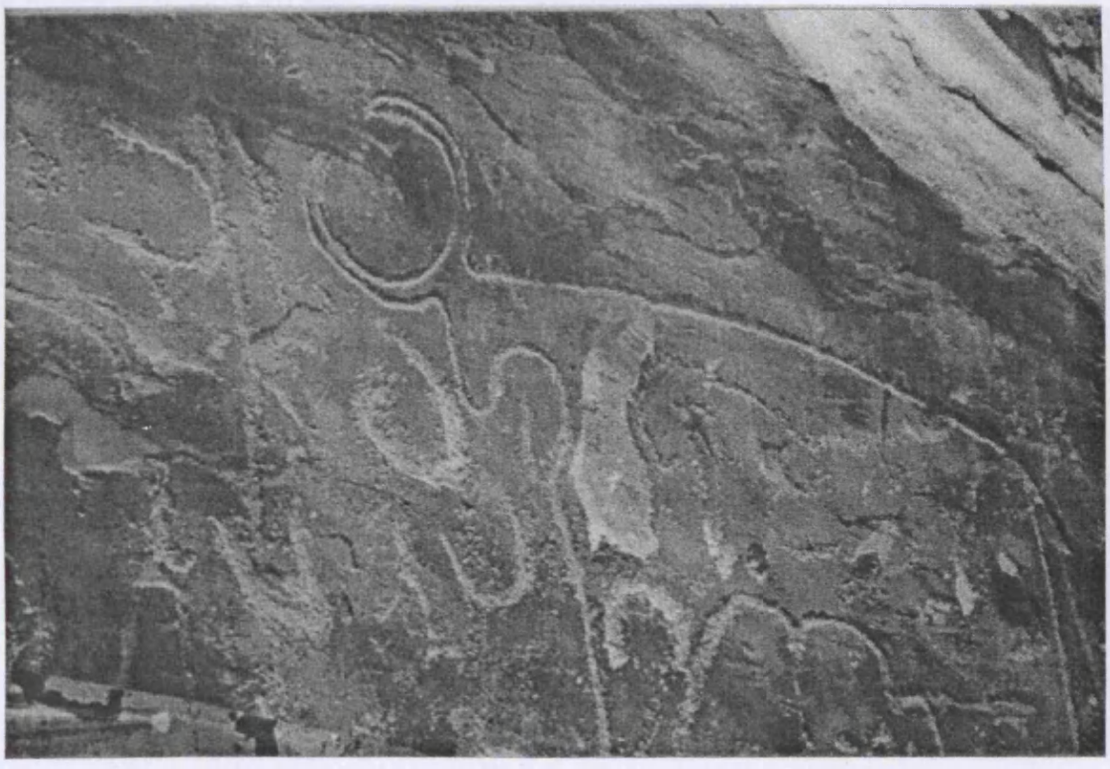


Figure 58

Bovid engravings superimposed by the geometric motifs of the Western Face of Foum Chor rock

Figure 59

Pecked (outlined) bovids of large size (the Western Face of Foum Chor rock)

Figure 60

Bovid engraving with inverse "C"-like horns (the Western Face of Foum Chor rock)

Figure 61

Close-up showing the technique used in executing the large-size bovid with thin polished outline (the Western Face of Foum Chor rock)

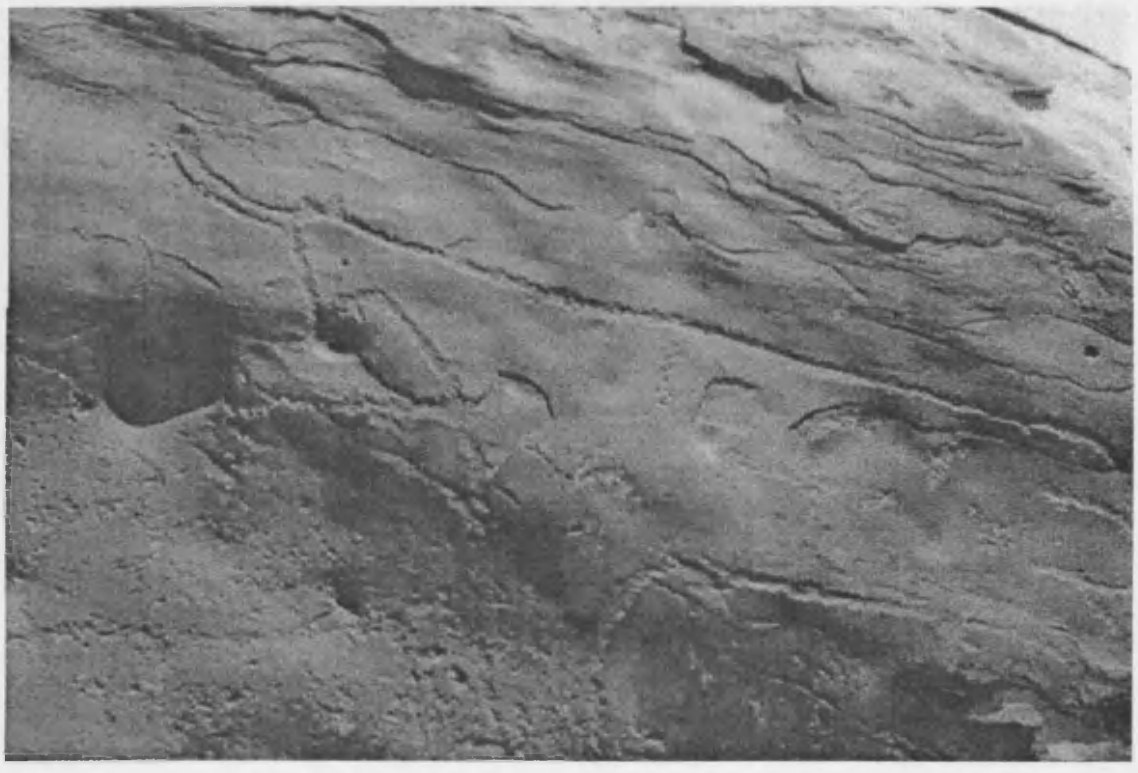


Figure 62

Pecked (thick outlined) bovid of large size (note the irregularities and cavities of different size randomly scattered on the Western Face of Foum Chor rock)

Figure 63

The Pecking technique used in executing a large-size bovid (the Western Face of Foum Chor rock)

Figure 64

A hornless bovid of large-size executed by using pecking technique (the Western Face of Foum Chor rock)

Figure 65

Two differently patinated engravings: darkly patinated bovid (to the left) and lightly patinated hyaena (the Western Face of Foum Chor rock)

Figure 66

Pecked (outlined) cattle of small size with partly pecked body; the one to the left is superimposed by an Arabic inscription and a geometric motif (the Western Face of Foum Chor rock)

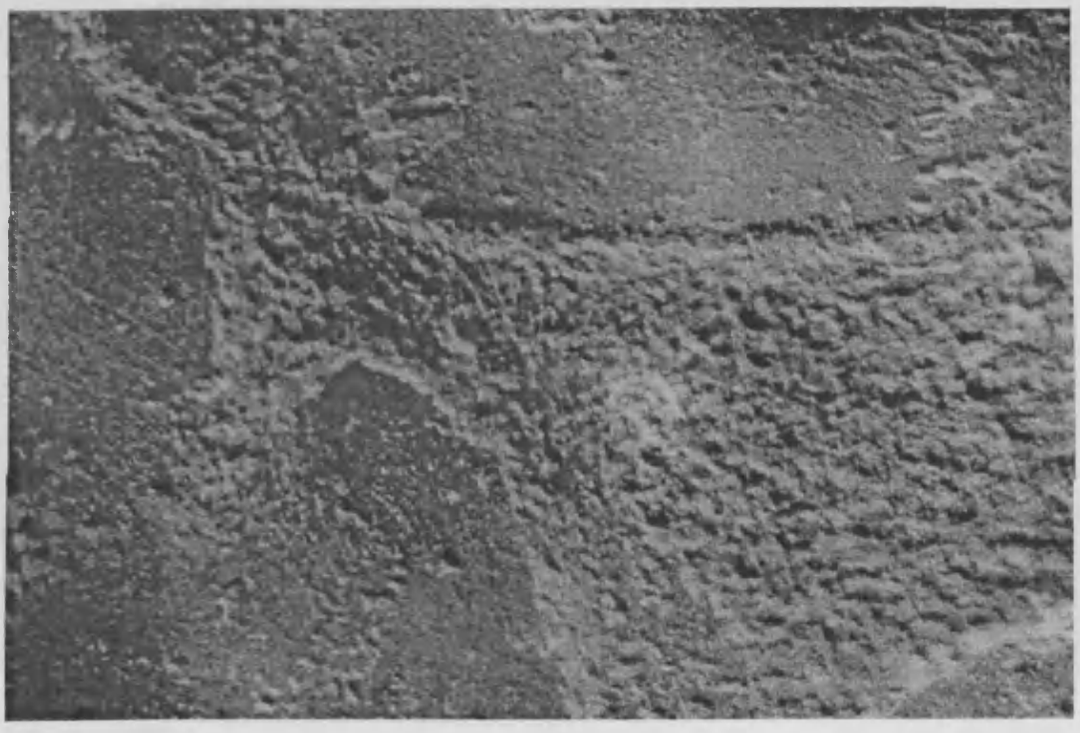


Figure 67

Pecked (outlined) cattle of small size with partly pecked body: details (the Western Face of Foum Chor rock)

Figure 68

The fissures on the lower part of the Western Face of Foum Chor rock

Figure 69

Unfinished bovid engraving (to the left hand side) and another incomplete quadruped placed on the Western Face of Foum Chor rock

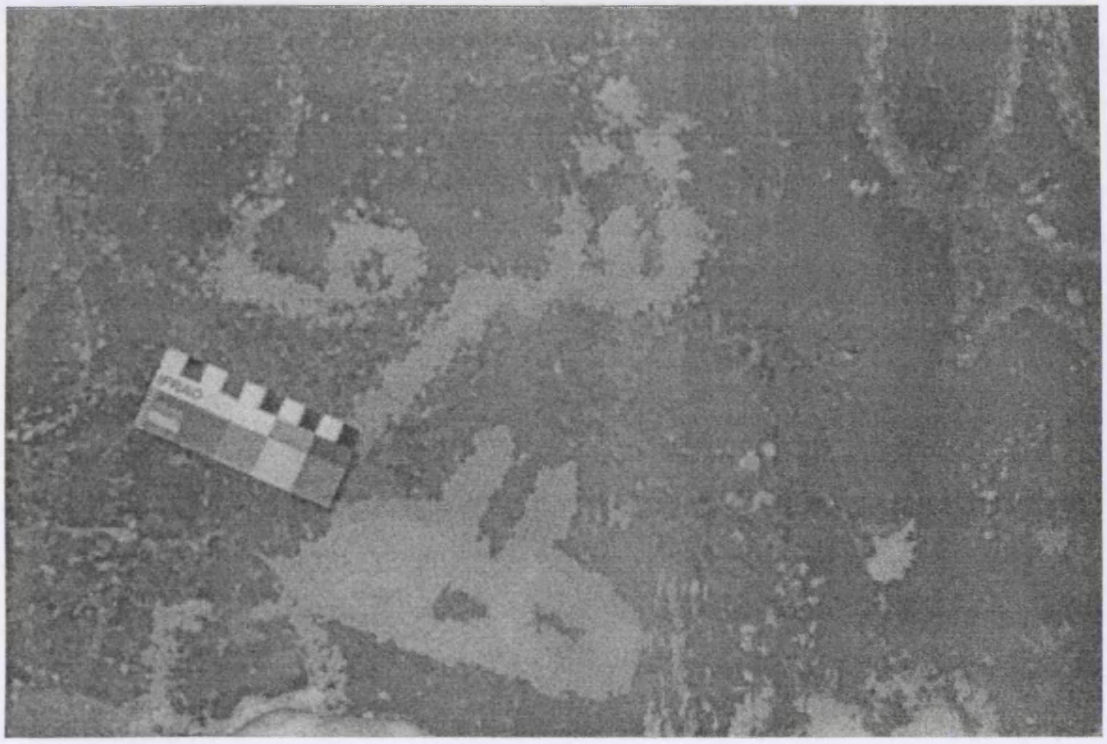


Figure 70

Lightly patinated engravings: An Arabic name (to the top) and a geometric sign (the Western Face of Foum Chor rock)

Figure 71

A part of the artistic composition of the Western Face of Foum Chor rock

Figure 72

Two differently patinated animal engravings superimposed on an unfinished dark patinated bovid: a donkey (with light patina) and a dromedary (with medium patina) (the Western Face of Foum Chor rock)

Figure 73

The Left Side of the Western Face of Foum Chor rock where other animal (apart from bovids) are concentrated (the Western Face of Foum Chor rock)

Figure 74

Zoomorphic figures engraved in schematic style (the Western Face of Foum Chor rock)

Figure 75

Schematic animals (an equid and a canid) and geometric motifs pecked on the Western Face of Foum Chor rock

Figure 76

A 4 cm x 2.5 cm canid engraving (the Western Face of Foum Chor rock)

Ahel-Ebdemmed Site:

General View

Figure 77

Long shot of the mountain pass leading to the Ahel-Ebdemmed site (taken from the western direction)

Figure 78

The mountain pass leading to the Ahel-Ebdemmed site (taken from the western direction)

Figure 79

The mountain pass leading to the Ahel-Ebdemmed site (taken from the western direction)

Figure 80

The other side of the *Khneg* as seen from the Ahel-Ebdemmed rock art site

Figure 81

Long shot of Ahel-Ebdemmed site (taken from the Eastern direction)

Figure 82

The *Khneg* Ahel-Ebdemmed as seen from the rock art site

Figure 83

Large boulders concealing the engraved surface of Ahel-Ebdemmed site

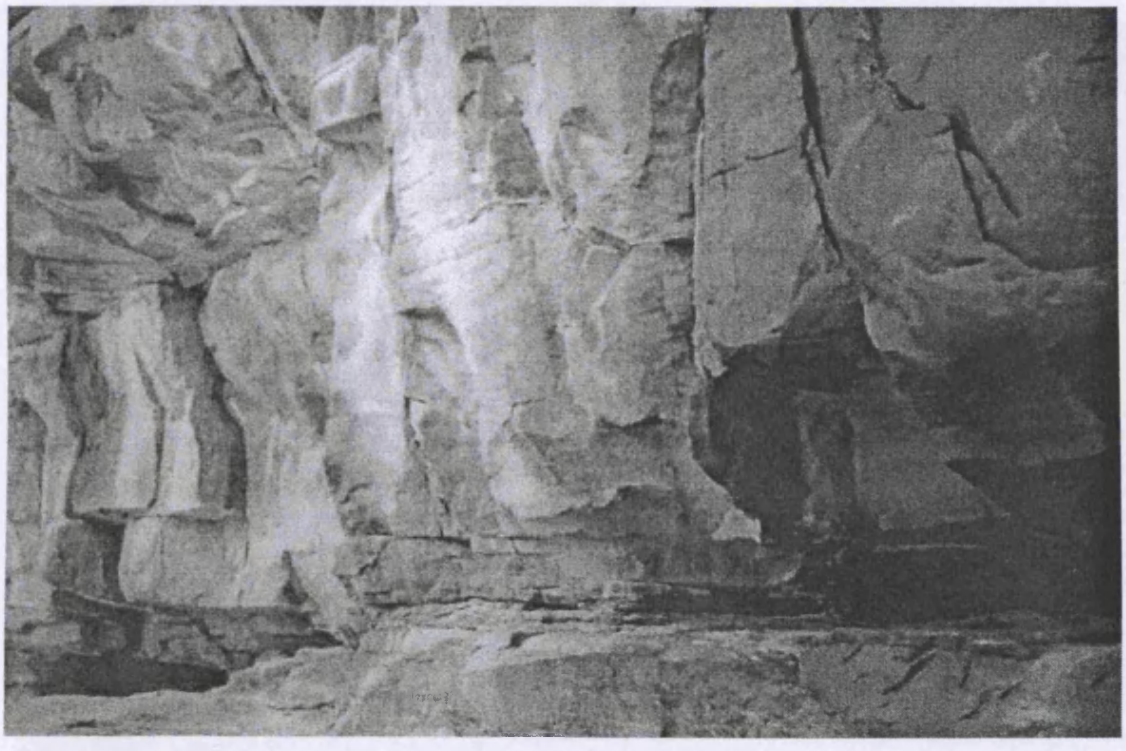


Figure 84

A section of the base rocks of Ahel-Ebdemmed site

Figure 85

The eastern end of the base rocks of Ahel-Ebdemmed site

Figure 86

The Eastern side of the *Khneg* at Ahel-Ebdemmed

Figure 87

The traces of the palaeolake at Ahel-Ebdemmed

Figure 88

A rock shelter (?) close to the engraved area at Foum Chor

Figure 89

Long shot of Ahel-Ebdemmed

Figure 90

Close view of Ahel-Ebdemmed

Ahel-Ebdemmed Site:

The Engravings

Figure 91

The engraved area at Ahel-Ebdemmed

Figure 92

Close-up of the engravings at Ahel-Ebdemmed

Figure 93

Side-view showing a large boulder concealing a part of the engraved area at Ahel-Ebdemmed

Figure 94

The irregularity of the engraved area at Ahel-Ebdemmed

Figure 95

Tracing of the engraved area showing the seven artistic groups at Ahel-Ebdemmed

Figure 96

Photograph of the engraved area showing the seven artistic groups Ahel-Ebdemmed

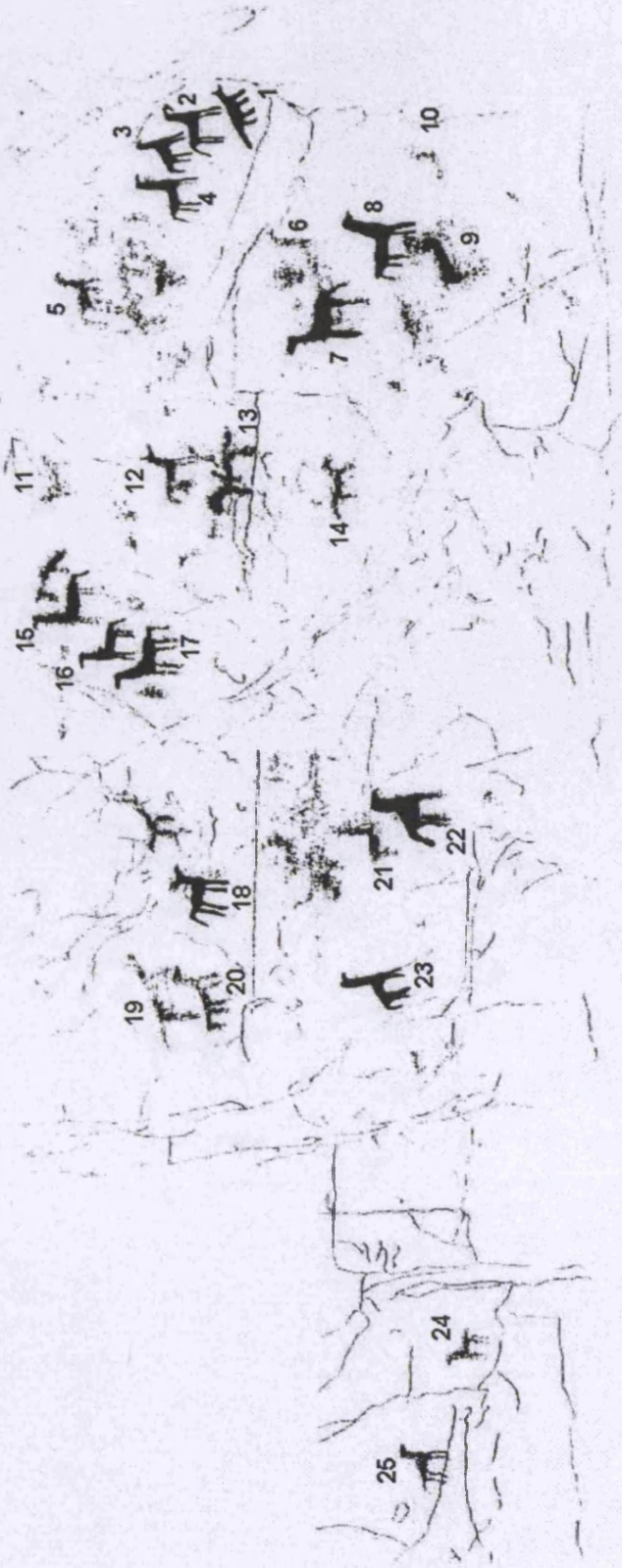


Figure 97a

The zoomorphic motifs at Ahel-Ebdemmed: tracing

Figure 97b

The geometric motifs at Ahel-Ebdemmed: tracing

Figure 98

Natural features of the engraved area at Ahel-Ebdemmed

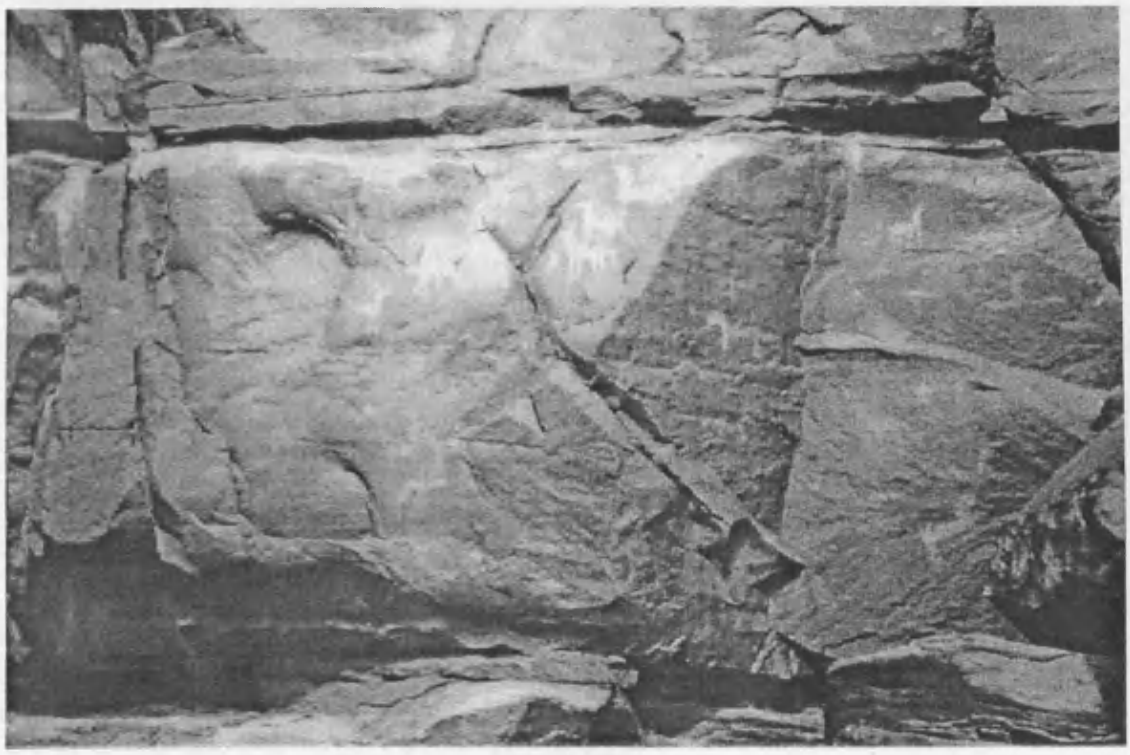


Figure 99

The shape of the rock face and animal groupings at Ahel-Ebdemmed: tracing

Figure 100

A part of the carefully engraved equids at Ahel-Ebdemmed

Figure 101

Close-up of the engravings of the first group at Ahel-Ebdemmed

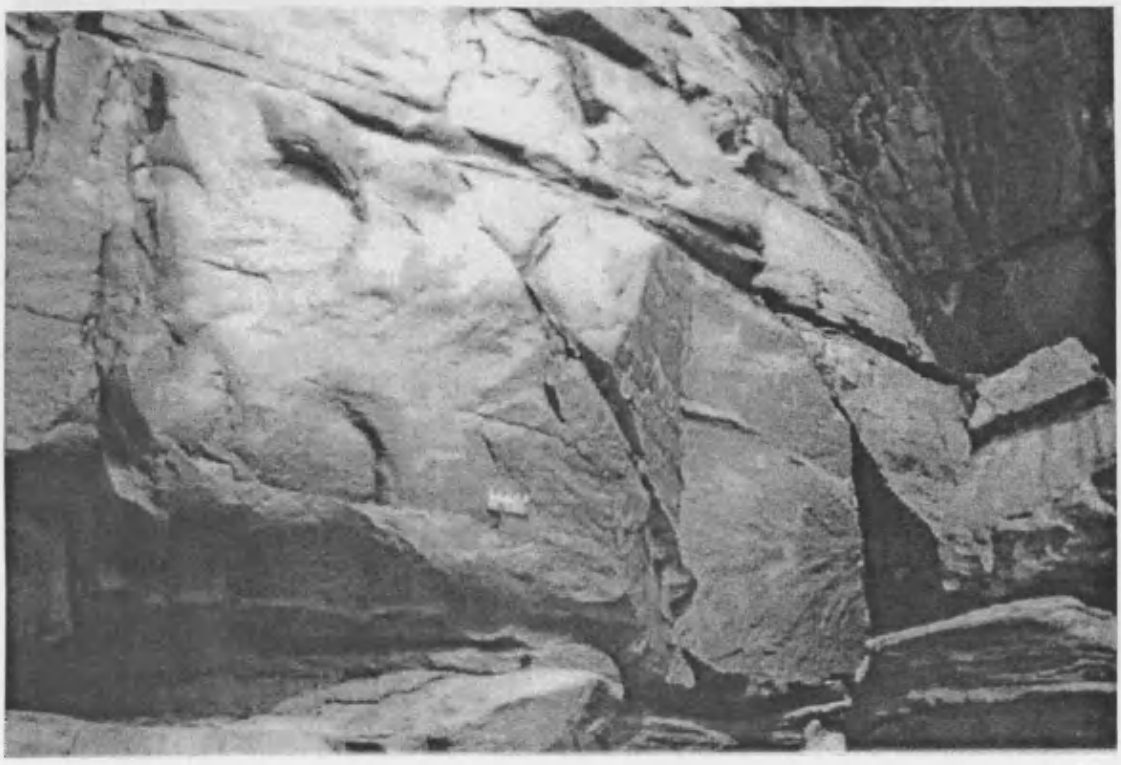


Figure 102

The shape of the rock face at Ahel-Ebdemmed

Figure 103

A part of the rock formation at Ahel-Ebdemmed

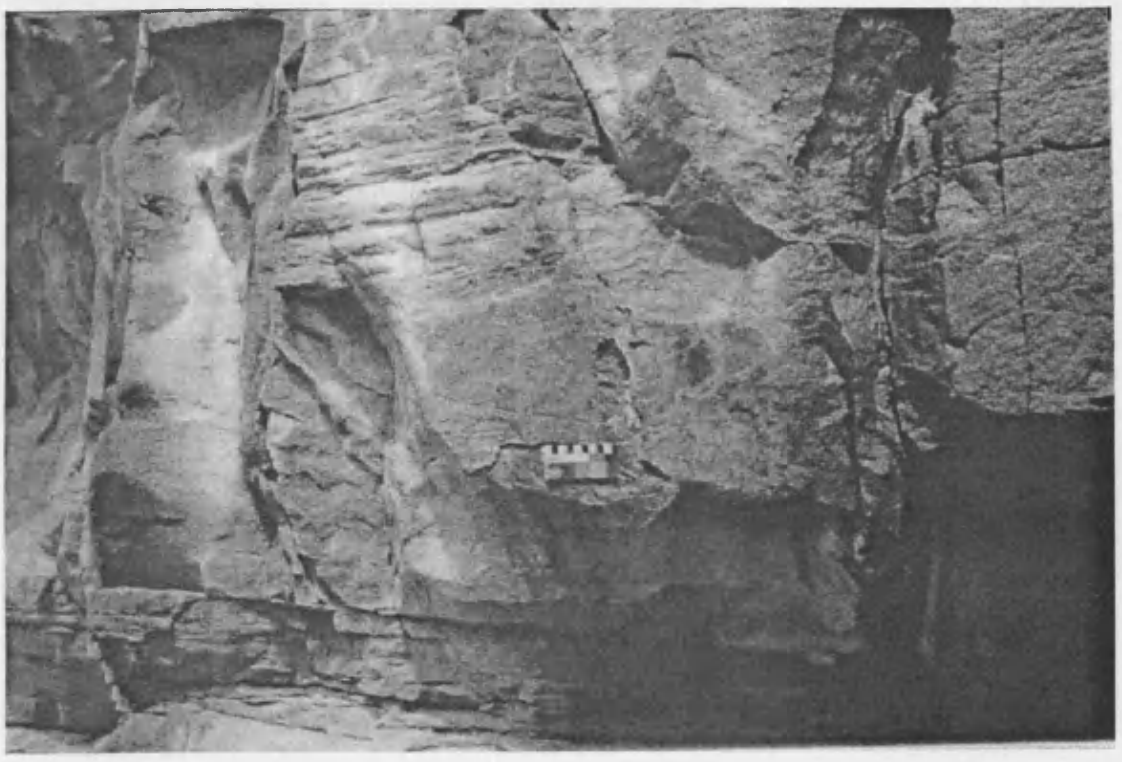


Figure 104

The engravings of the seventh group at Ahel-Ebdemmed

Figure 105

The engravings of the third, fourth, fifth and sixth groups at Ahel-Ebdemmed

Figure 106

A side-view of a section of the engraved surface at Ahel-Ebdemmed

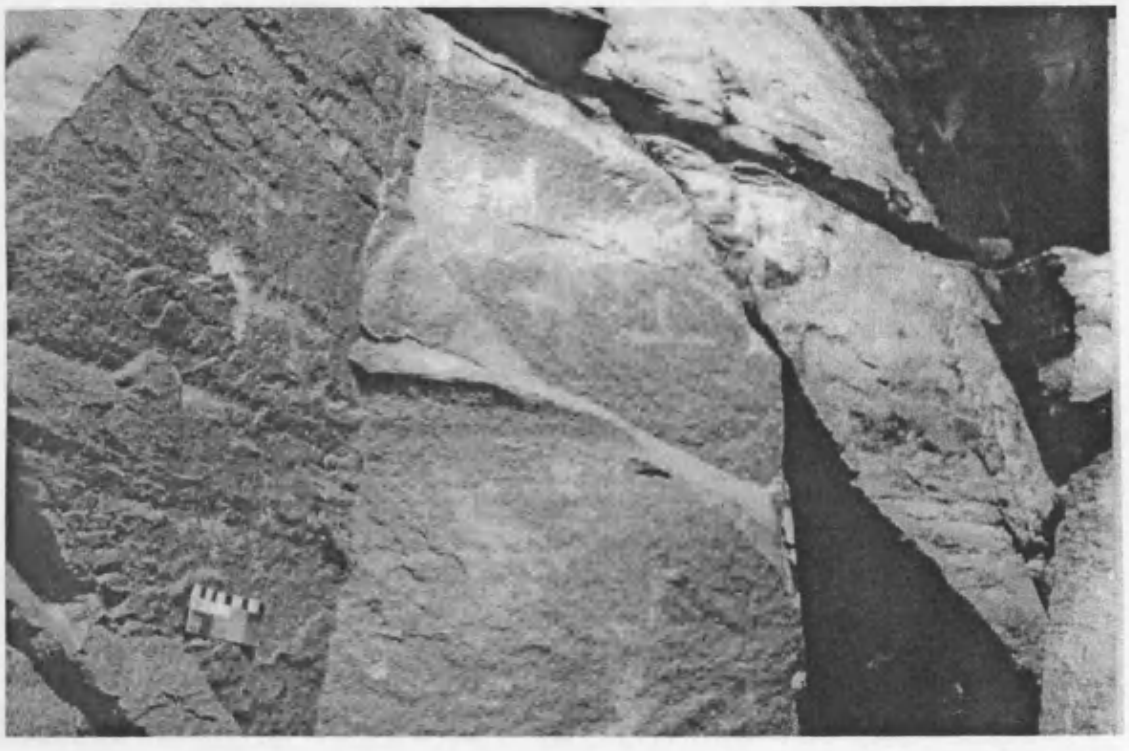


Figure 107

The first three groups of the engravings at Ahel-Ebdemmed

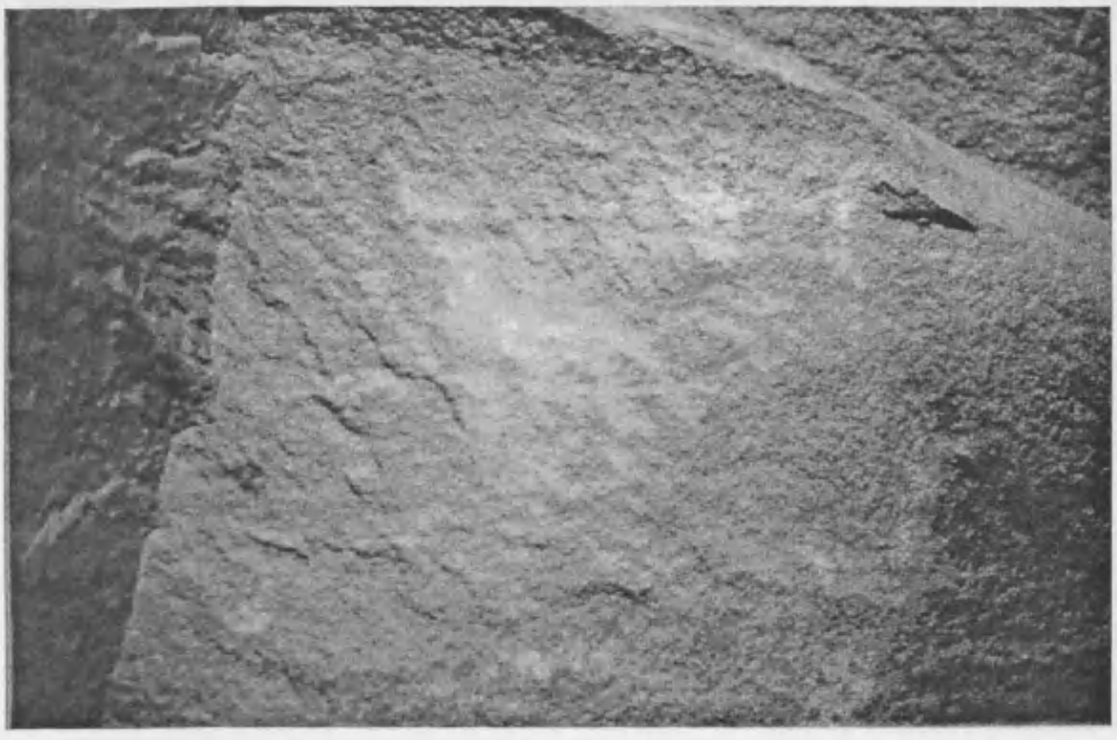


Figure 108

The equid motifs of the second group at Ahel-Ebdemmed (details)

Figure 109

The equid motifs of the second group at Ahel-Ebdemmed (details)

Figure 110

The zoomorphic figures at Ahel-Ebdemmed shown in silhouette

Figure 111

A part of the vertical black sandstone surface at Ahel-Ebdemmed rock art site

Figure 112

The engraved equids of the fourth group at Ahel-Ebdemmed

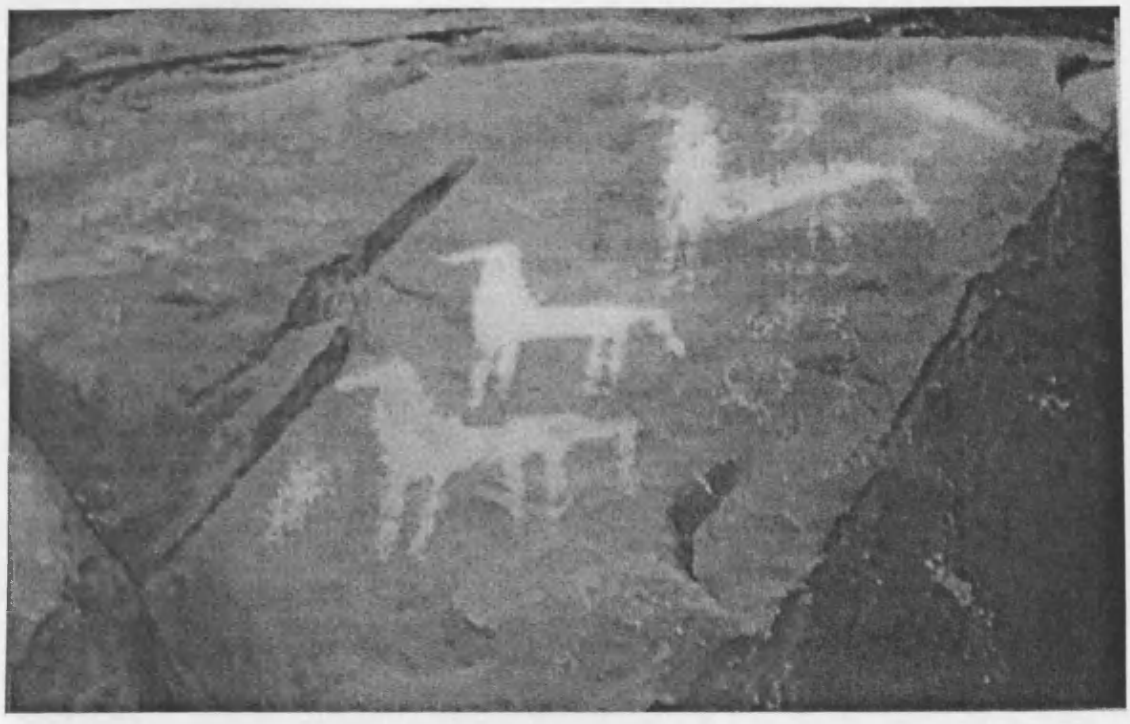


Figure 113

An example of the association between equid representations and geometric motifs (the fourth group at Ahel-Ebdemmed)

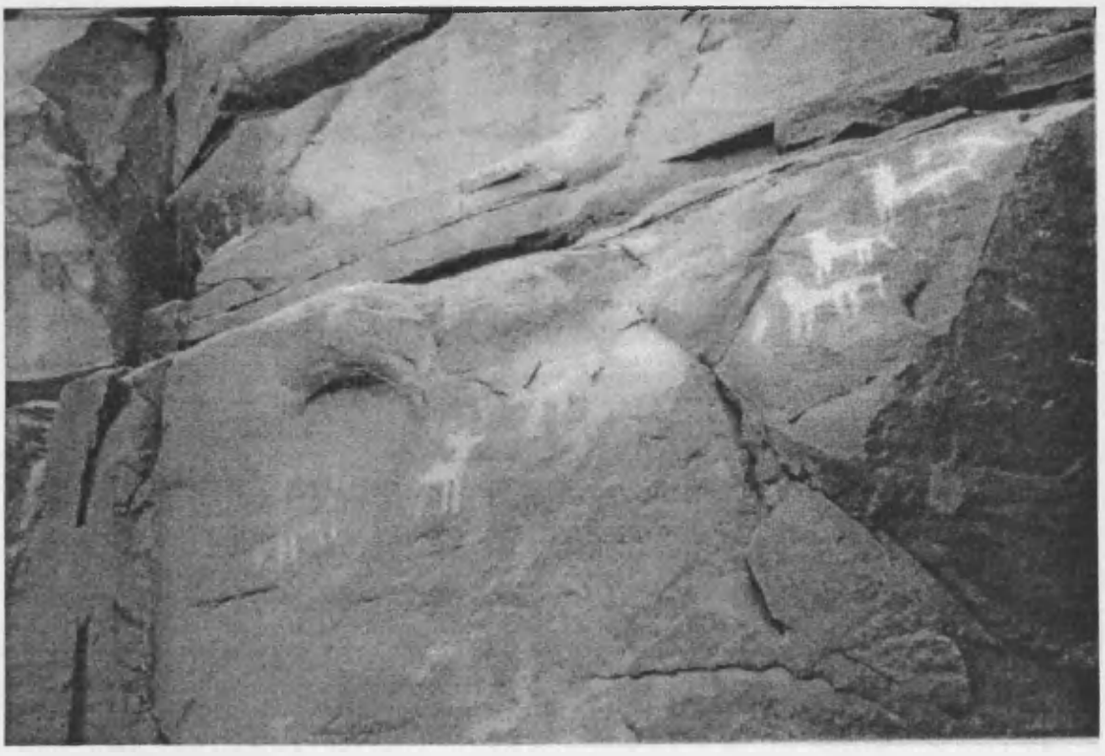


Figure 114

An example of the difference in patina of the represented equids at Ahel-Ebdemmed

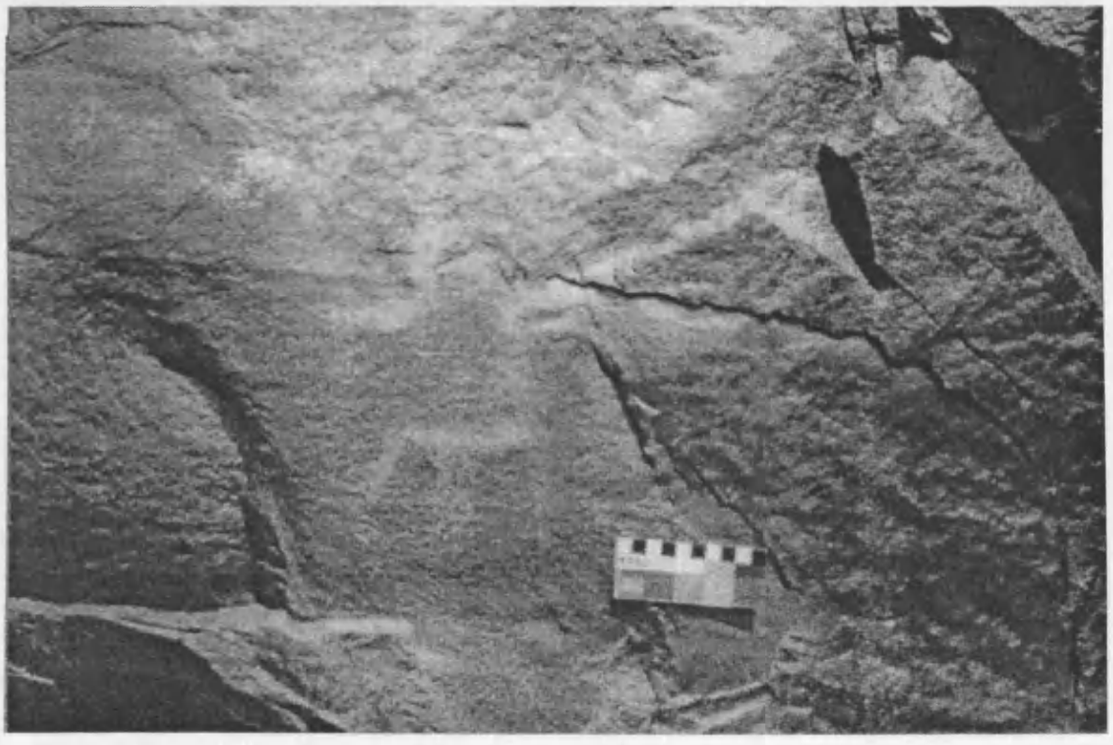


Figure 115

Two of the three equids of the sixth group at Ahel-Ebdemmed

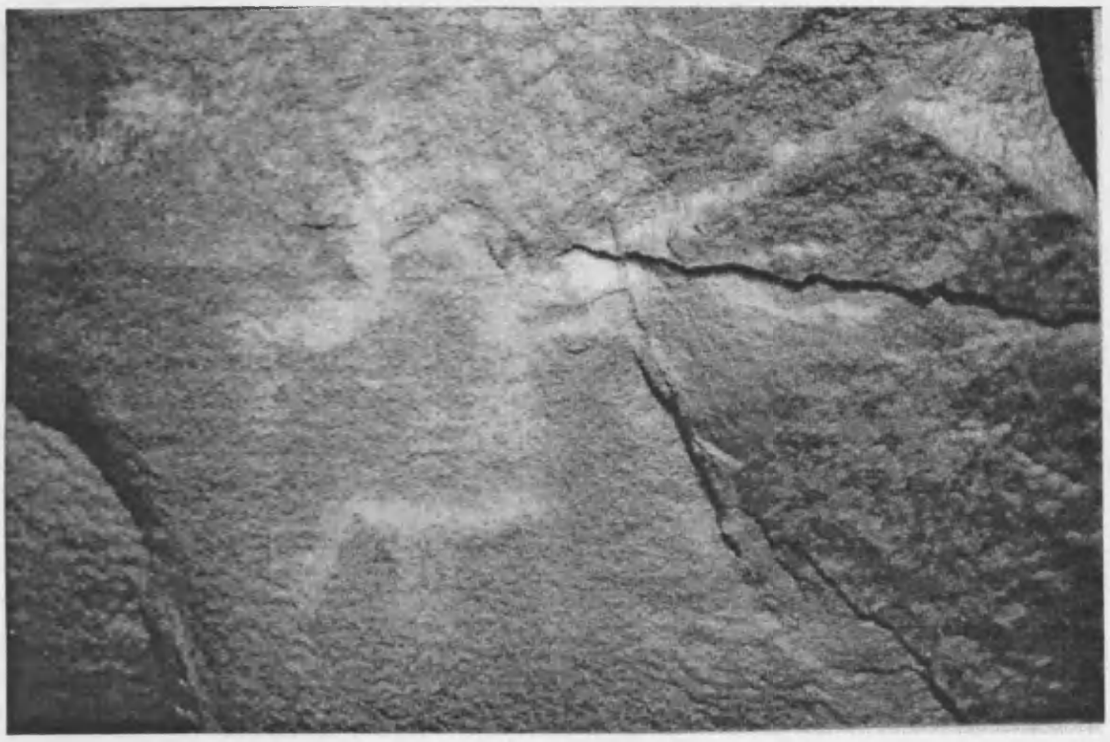


Figure 116

Two of the three equids of the sixth group at Ahel-Ebdemmed (details)

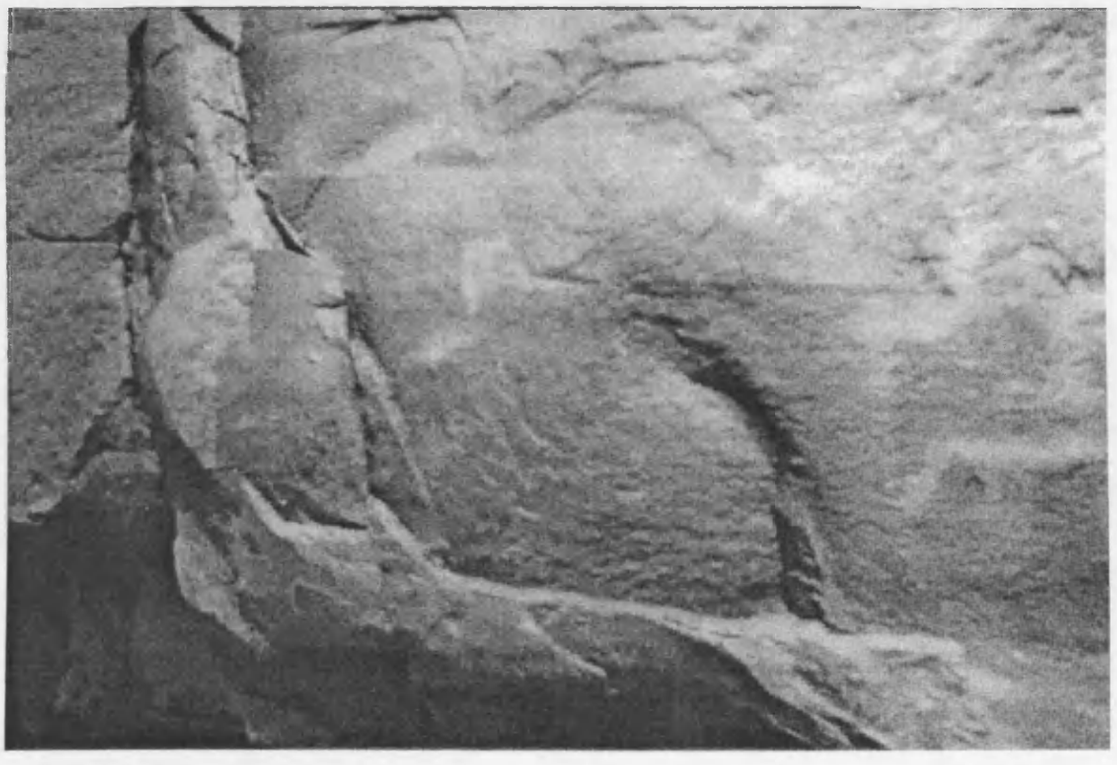


Figure 117

The engraved equids of sixth group at Ahel-Ebdemmed

Figure 118

The engravings of the fifth group at Ahel-Ebdemmed

Figure 119

The depicted donkey of the fifth group at Ahel-Ebdemmed

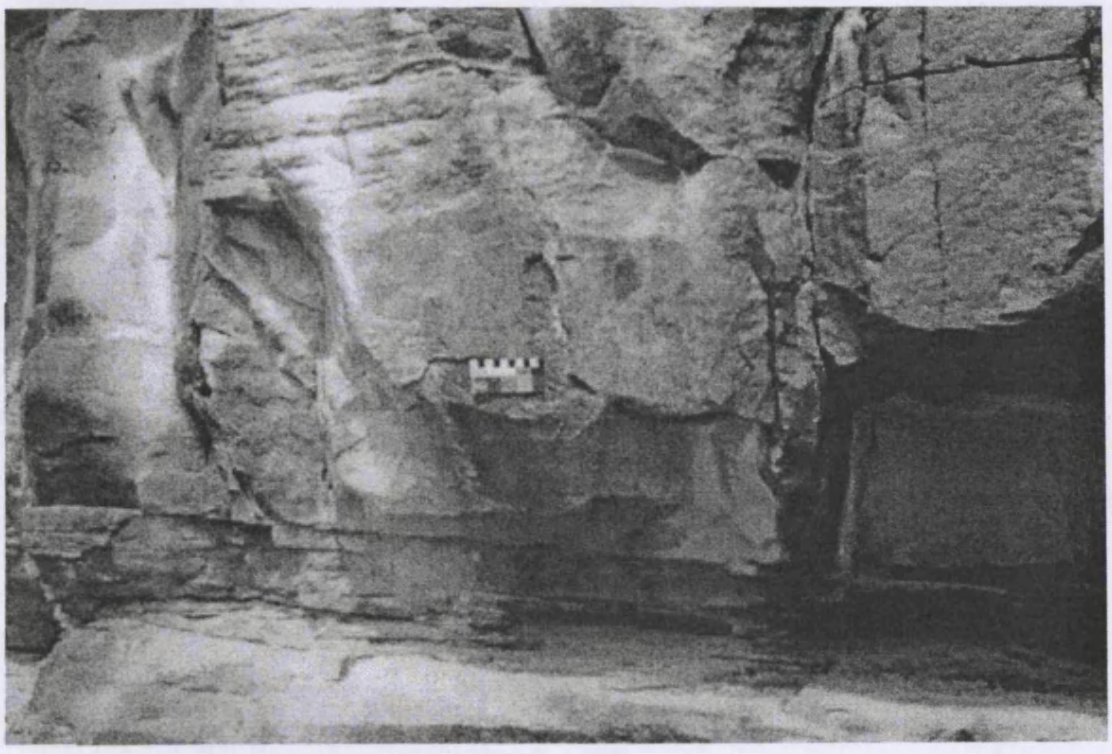


Figure 120

The two equids of the seventh group at Ahel-Ebdemmed

Figure 121

Close-up of the two equids of the seventh group at Ahel-Ebdemmed

Figure 122

Close-up of one of the two equids of the seventh group at Ahel-Ebdemmed

Figure123

Close-up of the head of one of the engraved equids showing the technique of execution (the fourth group at Ahel-Ebdemmed)

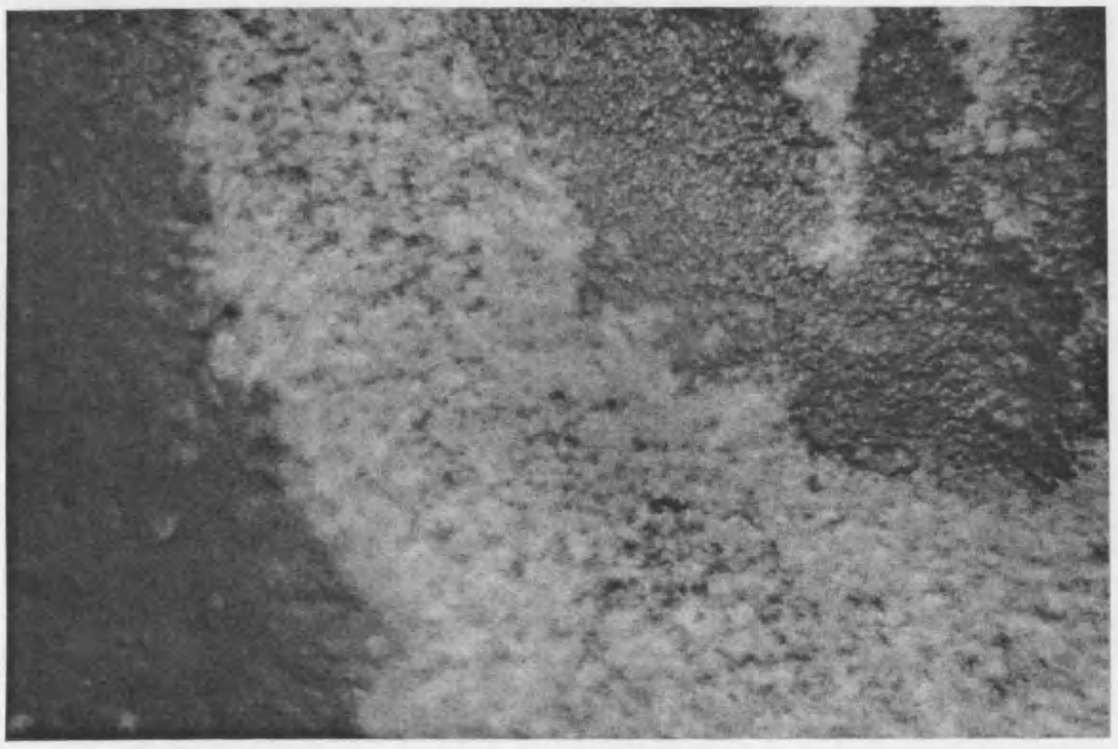


Figure 124

Close-up of the neck of one of the engraved equids showing the technique of execution (the fourth group at Ahel-Ebdemmed)

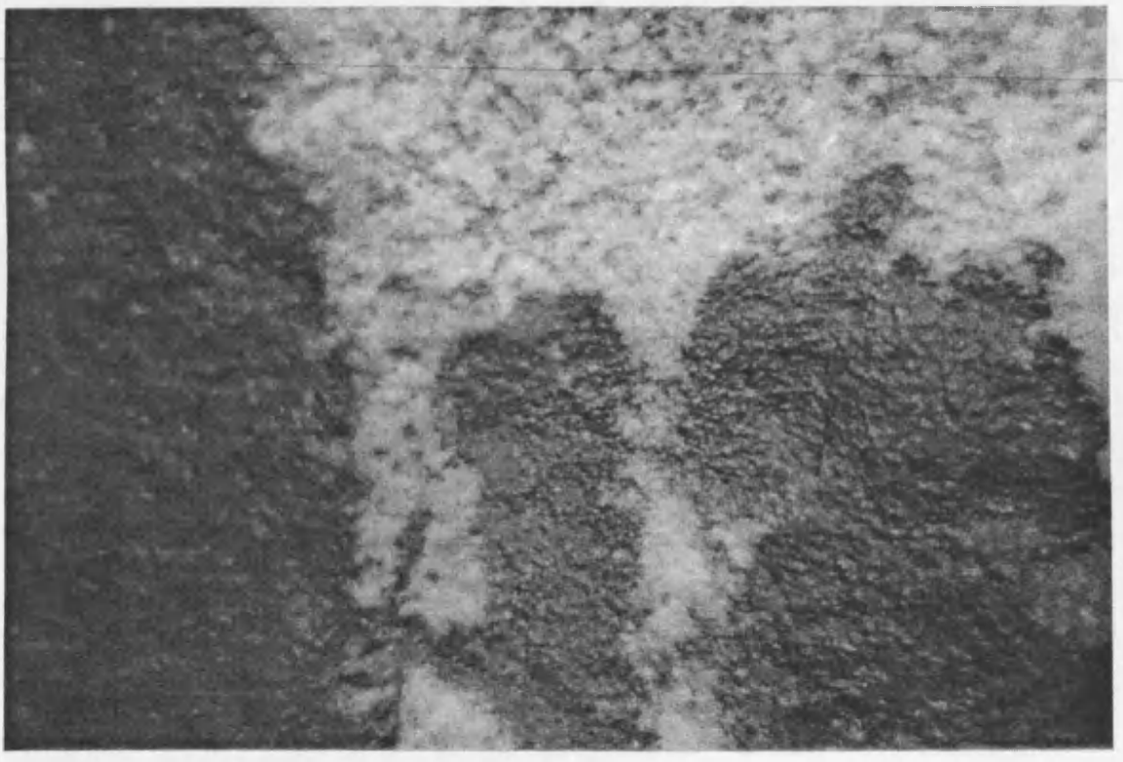


Figure 125

Close-up of the chest and fore-limbs of one of the engraved equids showing the technique of execution (the fourth group at Ahel-Ebdemmed)

Figure 126

Close-up of the fore-legs of one of the engraved equids showing the technique of execution (the fourth group at Ahel-Ebdemmed)

Animal Brands:

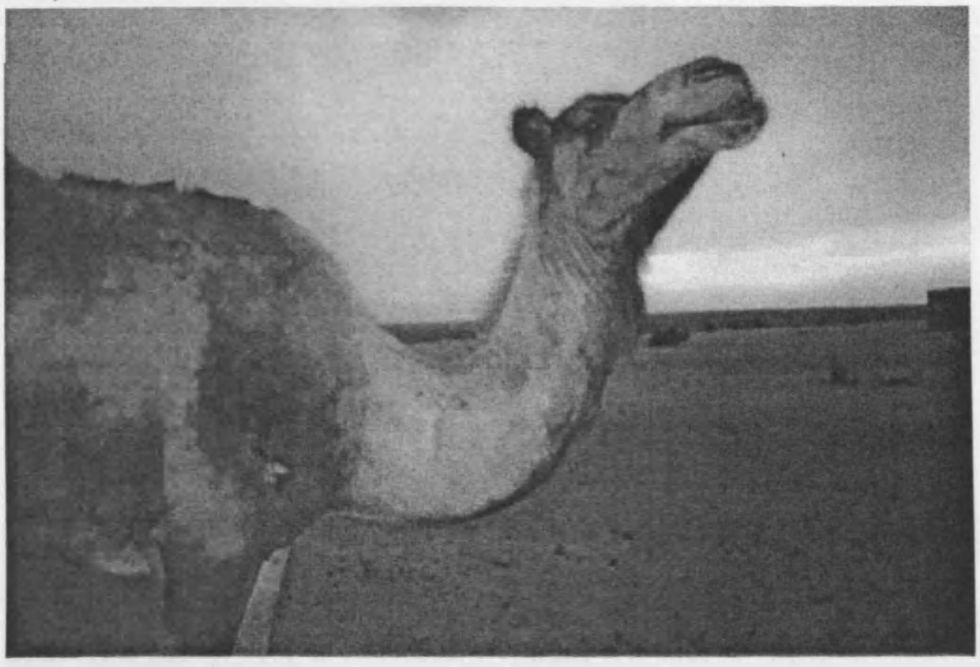


Figure 127

T-shaped sign, branded on the lower part of a dromedary's neck (Azougi village, northern Atar)

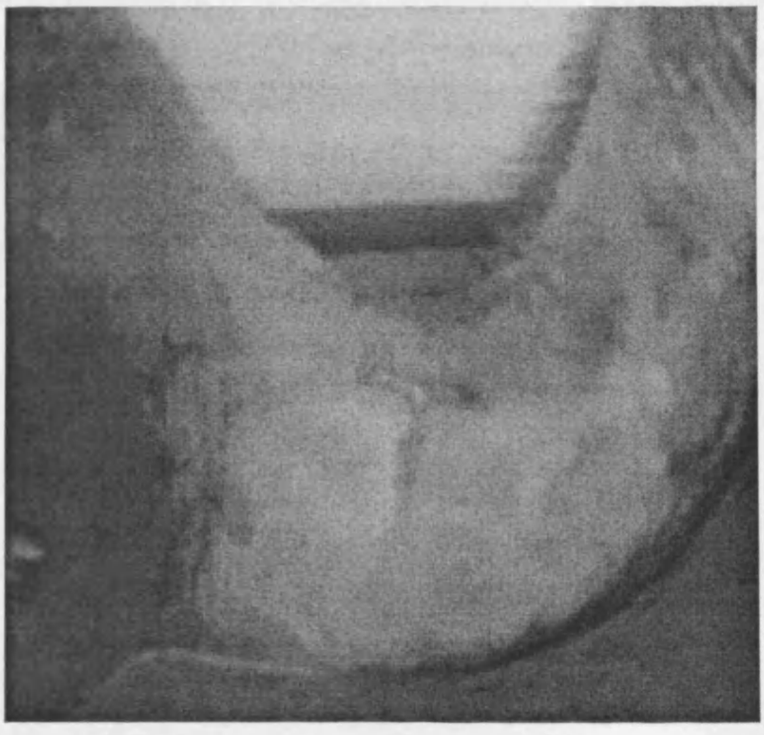


Figure 128

Close-up shot of the the *Alama* (sign) branded on the lower part of a dromedary's neck (Azougi village, northern Atar)

Figure 129

Foum-El-Hassane, Ighir Ighanian, Tamanart basin, southern Morocco

(Simoneau 1977: *Blanche* 48)

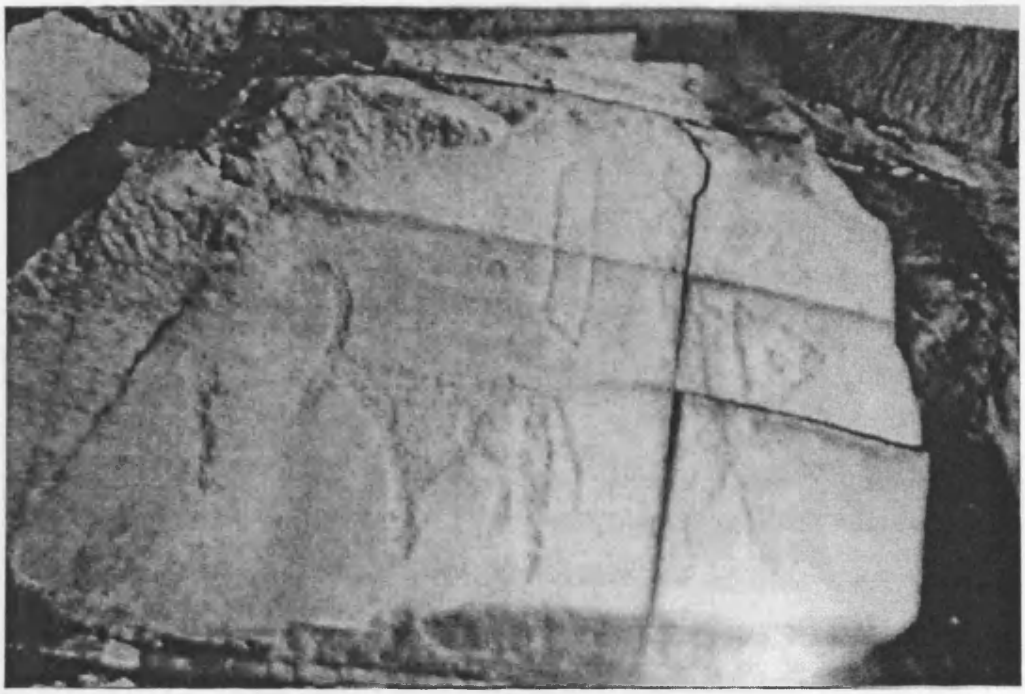


Figure 130

Akka, Adrar Metgourine, southern Morocco

(Simoneau 1977: *Blanche* 56)

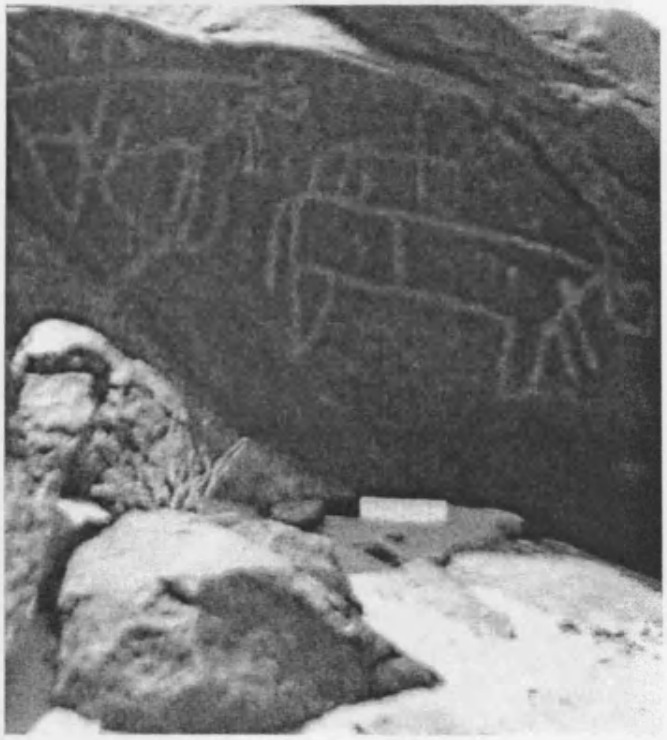


Figure 131

Gleibat el Musdar, The Western Sahara

(Nowak & Ortner 1975: *Abb.* 188)

Figure 132

Oudi Aasli Bu Querch, The Western Sahara

(Nowak & Ortner 1975: *Abb.* 69)

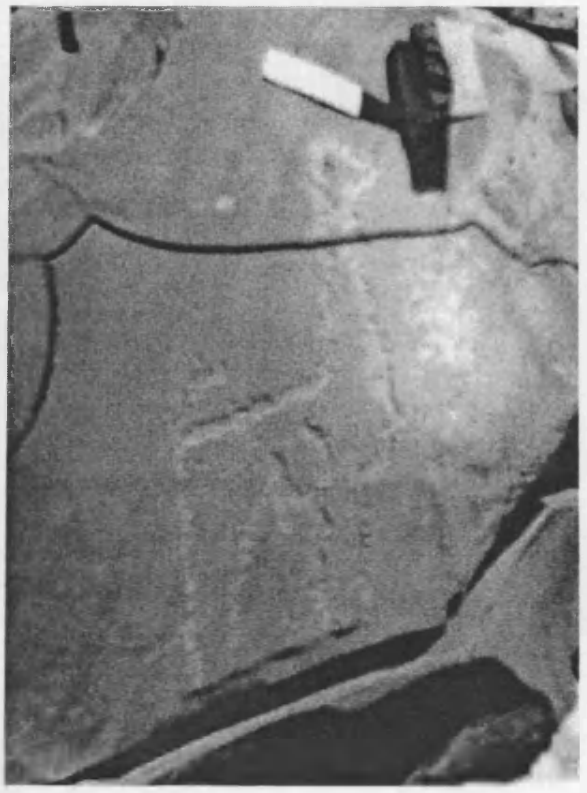


Figure 133

Loma de Aasli, The Western Sahara

(Nowak & Ortner 1975: *Abb.* 81)

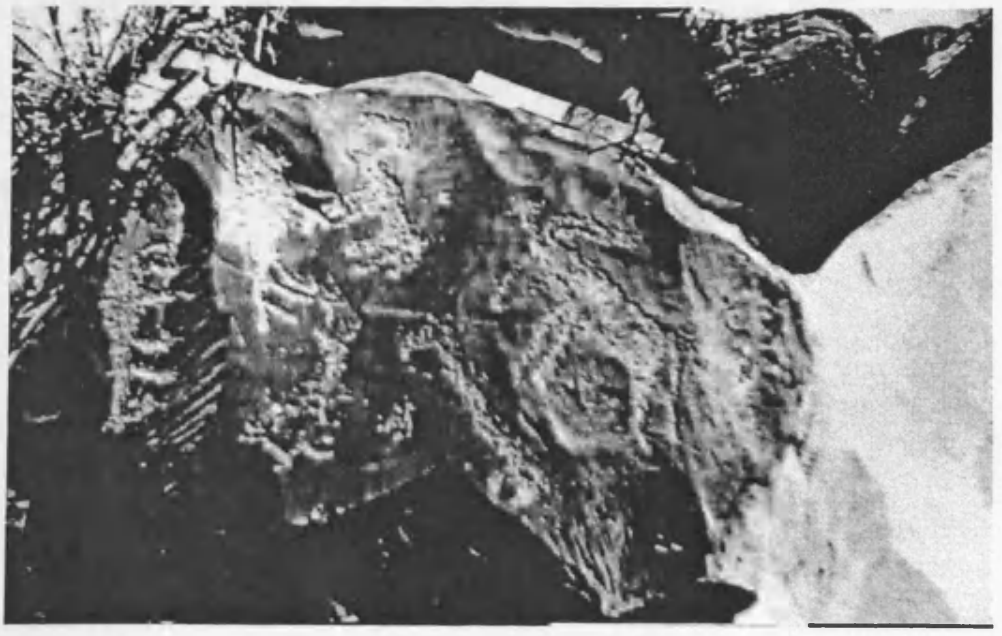


Figure 134

Oudi Aasli Bu Querch, The Western Sahara

(Nowak & Ortner 1975: *Abb.* 70)

Figure 135

Bu Lariah, The Western Sahara

(Nowak & Ortner 1975: *Abb.* 151)

Figure 136

Bu Lariah, The Western Sahara

(Nowak & Ortner 1975 *Abb.* 152)

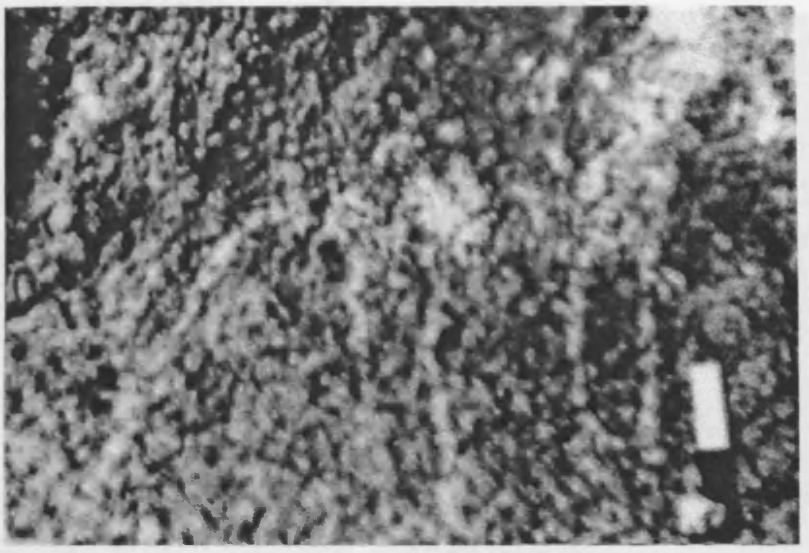


Figure 137

Auserd, The Western Sahara

(Nowak & Ortner 1975: *Abb.* 150)

Figure 138

Leyuad, The Western Sahara

(Nowak & Ortner 1975: *Abb.* 163c)

Figure 139

Loma de Aasli

The Western Sahara

(Nowak & Ortner 1975: *Abb.* 73)

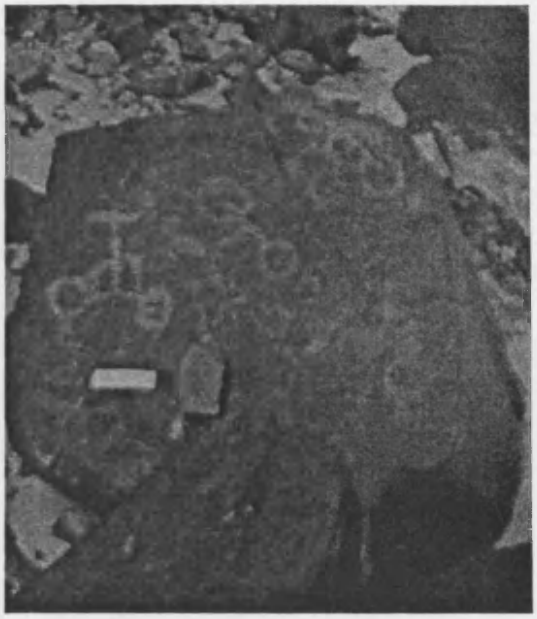


Figure 140

Gleibat el Musdar

The Western Sahara

(Nowak & Ortner 1975: *Abb.* 187)

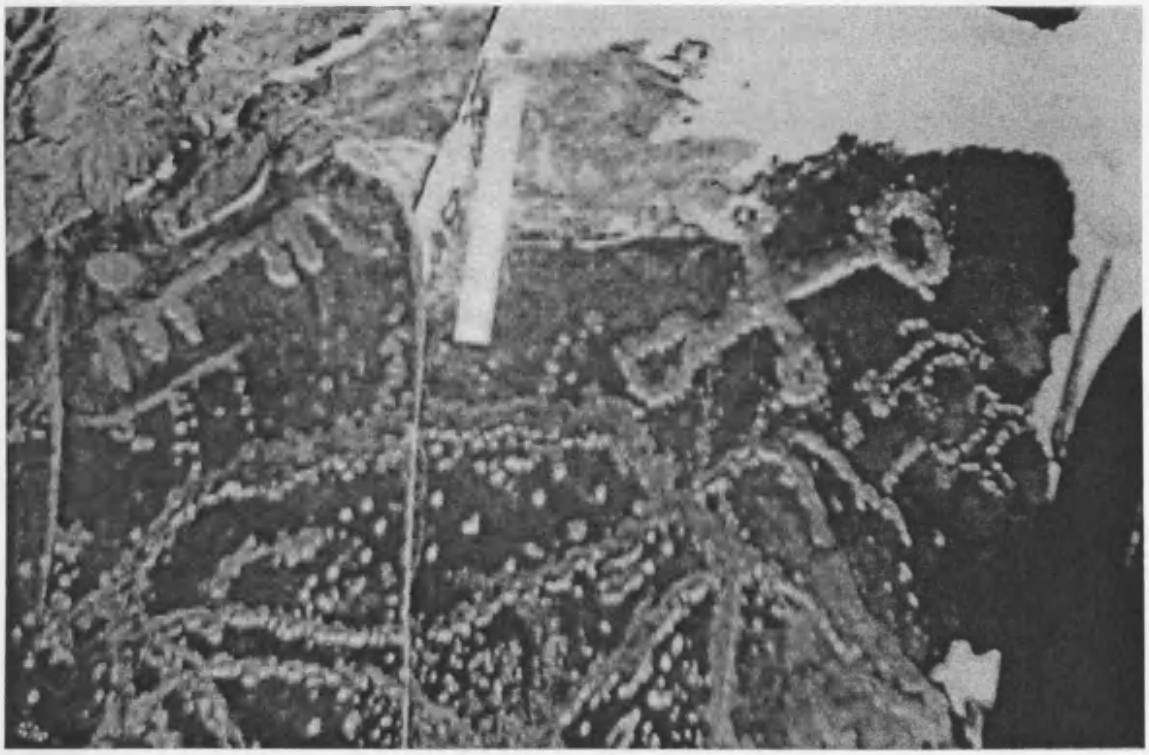


Figure 141

Oudi Asli Bu Querch, The Western Sahara

(Nowak & Ortner 1975: *Abb.* 71)

Figure 142 Figure143

Bu Lariah, The Western Sahara

(Nowak & Ortner 157: *Abb.*157 & 158)

Researcher at work:

Figure 144

Rock art recording by making a tracing of the rock art on a sheet of plastic (the Eastern Face of Foum Chor rock)

Figure 145

Rock art recording by making a tracing of the rock art on a sheet of plastic (the Western Face of Foum Chor rock

Figure 146

Rock art recording by making a tracing of the rock art on a sheet of plastic (the Northern Face of Foum Chor rock)

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Appendix

Rock Engravings of Northern Atar
The Adrar Plateau – Mauritania
Campaign March-April 2001

A. Location:

1- Country:
2- Region:
3- State:
4- Name of the area:
5- Site name:
6- Local name of the site:
7- Site number:
8- Latitude:
9- Longitude:
10- Altitude (m):
11- Site sitting:
12- Scale map:

B. Realization:

1- Date of photographing:
2- Date of rubbing:
3- Date of drawing:
4- Date of tracing:
5- Date of registration:
6- Discovered by:
7- Responsible for field survey:
8- Signature:

C. Site Composition and Geomorphology:

I. Type of rock:
II. Type of surface:
III. Co lour of rock:
IV. Geological age:
V. Geomorphology:
VI. Site floor:
VII. Finds, ceramic, lithics, etc:

D. Site Definition:

I. Position of site:
II. Inclination of engraved surface:
III. Direction faced by the engraved surface:
IV. General dimensions of site:
V. Area of engravings:

E. General information concerning the figures:

I. Total number of figures:
II. Style represented:
III. Definition of technique:
IV. Cases of superimposition:
V. Degree of patinatition:
VI. Description of the engravings:

F. Environment/the surrounding:

I. Type of vegetation:

II. Property:

III. Surrounding:

- Sun exposed:
- Water exposed (rains)

IV. Environment:

- Land:
- Near to:
- Position

G. State of conservation:

I. Damage, weathering, erosion:

II. Exfoliation/flake off:

III. Fracture:

IV. Vegetation:

H. Photographic documentation:

I. Kind of film:

II. Photographer:

III. Date:

IV. Purpose of photos:

V. View of photos:

I. Site Access:

J. Oral traditions regarding site:

K. Present/recent use:

L. Local guide:

M. Informants: